Automotive Aftermarket Industry Association

Digital Asset Best Practices Guideline

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Revision History

Release Date	Author	Notes
October 2005	P. Weilmeier	First release of the Imaging Best Practices Guideline
September 2013	P. Weilmeier	First release of the Digital Asset Best Practices Guideline which includes the updated content from the Imaging Best Practices Guideline and the addition of the digital asset types PDF, Video and Audio
February 2013	T. Mitchell	Updates to content to reflect the removal of the Digital Asset Delivery File and other edits and text clean up.

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New in this Release

This is the second release of the Digital Asset Best Practices Guideline. This guideline includes:

- The content from the initial Imaging Best Practices Guideline which will be retired as of the release of this document.
- Additional fields added to the Asset Types and File Types tables in the Asset Segment of PIES
- Updates to the product images best practices
    - 'Size' in the electronic Image has been changed from "maximum 1500 pixels on the longest side (height or width)" to "minimum 1500 pixels on the longest side (height or width)"
        - This new image specification only applies to images that are distributed to trading partners as of the release date of this new version of the AAIA Digital Assets Best Practices Guideline.
        - Images that were sent to receivers prior to this release date are subject to the "maximum …" image size and NOT the new "minimum …" image size.
    - For clarity, the definition of File Name in the Electronic Catalog and Line Art Image Specification tables has been altered.
    - All reference to 'print' and specifications relating to printing product images has been removed. The best practices and specifications in this guideline apply to electronic product images only and not print.
    - The IPO (Internet Parts Ordering) image specifications table is no longer relevant and has therefore been removed from this guideline.
- Addition of best practices for the PDF, video and audio digital asset types.

Digital Asset Delivery Best Practice

The industry standard and preferred format for the delivery of Digital Assets is a PIES file. Please refer to the Digital Asset File Information Segment (ASST) for relevant codes and formatting. Additional File Types and Asset Types have been included in the PIES 6.5 documentation to capture the changing technologies.

Product Image Best Practices

The imaging recommendations in this guideline apply to images used for electronic catalogs *only*. The specification defined in this document does not apply to product and lifestyle images used for print including posters, full-page magazine ads and other high-resolution marketing materials. The image specifications for print are project-specific and should therefore be defined between trading partners.

The Workgroup has developed image specifications for the following image types;

- Electronic catalog digital images.
- Electronic catalog line art images.

The tables in the next sections provide detailed specifications for each of these image types. These specifications have been accepted by most major trading partners although it is advisable to consult with your trading partner(s) prior to formatting images.

Electronic Catalog Digital Image Specifications

All digital images to be used in electronic catalogs and on trading partner web sites should be formatted according to the following specifications:

Electronic Catalog Image Specifications		Notes
Format	TIFF	
Size	Minimum 1500 pixels on the longest side (height or width)	Setting the minimum height or width to 1500 pixels ensures that white space between the outer edge of the product and the outer edge of the image canvas is minimized. To illustrate this, a part that is long and thin could have an image canvas 1500 pixels wide by 400 pixels high
Mode	RGB or CMYK	Grayscale images are not acceptable. Images saved as RGB can have up to a 20% smaller file size (see table below)
Resolution	300 DPI	High resolution image file
Compression	None or LZW	Images with LZW compression can have a 35% smaller file size

Electronic Catalog Image Specifications		Notes
Image File Name	Full File Name	The image file is associated to the part number and other attributes via thePIES file
Platform	PC or Mac	Check with trading partner
White Space	Between 5 and 15 pixels around the edge of the image	Does not apply to close-up images where only a section of the part is in the image
Background	White	RGB: 255, 255, 255 unless the product is white; in this case background color, borders or shadowing can be used
Shadows	Removed	Some shadows are acceptable when used to define a white part on a white background

Table Notes:

- The Size specification defines the minimum image size at 1500 pixels on the longest side (height or width). This specification has been updated in this version of the Digital Asset Best Practices Guideline and therefore only applies to images that are captured, processed and distributed to trading partners after the release date of this Guideline. Images that were sent to receivers prior to this release date are subject to the "maximum of 1500 pixels …" image size and *NOT* the new "minimum of 1500 pixels …" image size.
- Formatting the images as TIFF allows trading partners to open, manipulate and save the images for various uses without losing any image data (no quality loss).
- Formatting the images at 300 DPI allows trading partners to size images for some small print and all electronic catalog projects.
- Formatting the images as CMYK or RGB and compressed and uncompressed can affect the image file size considerably (see the table below);

Product Test: Brake Caliper, no background, 80% product / 20% white space, 300 DPI			
Image Size (inches: W X H)	Image Mode	Compression	Image Size (MB)
5" X 5"	CMYK	No	8.8
5" X 5"	RGB	No	6.6
5" X 5"	CMYK	Yes: LZW	6.3
5" X 5"	RGB	Yes: LZW	3.9
3" X 3"	CMYK	No	3.1
3" X 3"	RGB	No	2.3
3" X 3"	CMYK	Yes: LZW	2.4
3" X 3"	RGB	Yes: LZW	1.5

- The 'Image Name' should consist only of alphanumeric characters and hyphens; spaces and any other special characters should not be used. All image names must include the extension, i.e., .tif.

Product Imaging Projects - Maximizing Return-on-Investment

For many companies, capturing, processing and distributing product images can be a significant, long term and costly process. The task of acquiring product images is either accomplished with internal resources or out-sourced to a service provider. It can involve hiring photographers, purchasing camera, lighting and studio equipment, deploying internal resources to manage the process and implementing systems and workflows to distribute complete image libraries to trading partners.

So the question becomes – how do you maximize your return-on-investment (ROI) on product imaging projects? Below are a few basic best practices when capturing product images that can help maximize your ROI on product imaging projects:

1. **Capture product images at the highest resolution possible.**

   Product images cannot be formatted to a higher size or resolution than they were initially captured at without losing quality but images can always be downsized and quality maintained. The most important component to producing high-resolution / large file size images is the camera. It is a best practice to invest in a good camera, semi-pro or better, with a high megapixel count – a minimum of 12 megapixels. This cost may seem high at the start of the project, but in the long run it will pay itself off many times simply because you will have the ability to produce high-quality images at a high resolution / file size. Not only will you have high-quality images for internal uses but you are well-equipped to satisfy current and future image specification requests from your trading partners.

2. **Produce the highest quality images possible.**

   In an ecommerce sales environment, products from multiple suppliers are compared side-by-side. Often the product that is presented the best wins the sale. Although it can cost more in equipment, photography and post-production image editing to produce higher quality images, increased sales over the long run will more than pay off the added investment.

3. **Capture as many image views per part as you think you will need now and in the future.**

   The biggest cost associated with product imaging projects is the up-front investment in people, equipment, processes and training. Once the investment has been made and you are set up to capture, process and distribute product images, it is wise to capture as many views per part as you think you will need at the time the product is pulled from inventory and in the hands of the photographer. It is much more efficient and cost-effective to capture additional images views of a product the first time rather than ordering the part again from inventory to re-shoot at a later date.

4. **Choose a file naming and filing convention that is consistent for your digital asset types.**

   When considering how you will store your digital assets, consider a naming and filing convention that will a) easily associate the digital asset to your product; b) provide consistency based upon the Digital Asset Type (i.e., Brochure versus Photograph; Image Orientation, etc. Performing this task will reap large dividends in actually maintaining your image library, and may help the automation process for compiling and sending digital assets to trading partners.

Electronic Catalog Line Art Image Specifications

All line art images that are being used in electronic catalogs and on trading partner web sites should be formatted according to the following specifications:

Print & Electronic Line Art Image Specifications		Notes
Format	TIFF or EPS	
Size	4000 pixels at 800 DPI on the longest side (height or width)	Setting the maximum height or width to 4000 pixels ensures that white space between the outer edge of the product and the outer edge of the image canvas is minimized. To illustrate this, a part that is long and thin could have an image canvas 4000 pixels wide by 1000 pixels high
Mode	Vector Black / White, Vector Color, Bitmap, Grayscale, or Color	
Resolution	800 DPI	
Compression	None or LZW	Images with LZW compression can have a 35% smaller file size (only applicable to TIFF)
Image File Name	Full File Name	Image file is associated to the part number and other attributes via a PIES file
Platform	PC or Mac	Check with trading partner
White Space	Between 5 and 15 pixels around the edge of the image	Does not apply to close-up images where only a section of the part is in the image
Background	White	RGB: 255, 255, 255
Scale	Must be to scale	
General Quality	1) Proofed for artifacts and smears, 2) Corners, edges and lines must be sharp	

Table Notes:

- Formatting the images as TIFF or EPS at 800 DPI allows trading partners to size the images for most print and electronic catalog purposes.
- The 'Image Name' should consist only of alphanumeric characters and hyphens; spaces and any other special characters should not be used. All image names must include the extension, e.g., .tif.

- The above image specifications allow the 'receiver' of the images to create image files according to their needs as long as the image size does not exceed 4000 pixels at 300 DPI on the longest side (height or width).

Line Art Image Requirements

Depending on the product line and trading partner, line art images may be required in addition to digital images. In general, digital images are required for all parts and line art images are only required for specific product lines. Because the list of part names that require line art images differs considerably between trading partners it is best to check with your trading partners for their specific requirements.

Other Document Specifications

All other documents including MSDS, installation instructions, technical bulletins, and reference drawings should be formatted as an Adobe PDF.

Image Distribution

While there are many methods of distribution of images, such as setting up and sending files via FTP; there are more efficient means of sending Digital Asset Images due to the constraints of large file sizes. Three recommended methods of distributing images to trading partners are; 1) on CD-ROM or DVD and sent to trading partners accompanied by a PIES file, 2) by accessing the trading partner's web server; the location of the image / image folder URL would be obtained through a PIES file, or 3) encoded in valid XML characters using BINHEX or BASE64 encoding and sent to trading partners in a PIES file. Trading partners may prefer one method over the other, accept either method or require the use of only one method; consult the trading partner accordingly.

1. **CD-ROM or DVD:** This method can be used when distributing small or large quantities of images to trading partners. The Imaging Workgroup recommends that when large quantities of image files are distributed, this method be used simply because method 3) below will result in an unmanageably large file. For example, if 2,000 images are sent to trading partner A from image creator B encoded in an XML file the time to transfer the file would be unreasonable.

   Note: When sending images to trading partners on CD-ROM or DVD it is important to separate the images into a logical folder or media structure based on brand or other important differentiating aspects. This will allow the trading partners to easily access the images they need. Please also refer to our previous note on file naming.

2. **Access to trading partner's web server:** This method can be used when an 'image creator' (i.e., a manufacturer) provides trading partner (i.e., retailers / eCat providers) access to a server for the purpose of downloading specific images.

3. **BINHEX or BASE64 Encoded:** This method will work well when sending small quantities of image files to trading partners. The following are some examples of when you might use this method;

   a. Sending a small number of image files for update with your trading partner.

b. Sending supporting image documents like MSDS sheets, and reference and installation drawings.

The Product Exchange Standard (PIES) and Product Images

Refer to the most current version of PIES documentation for the PIES tables, codes and fields relevant to product images.

At the time of the latest release of this document PIES 6.4 was the latest version. PIES 6.5 is scheduled for release in April 2013, and will contain all the updated Asset Codes, Types and Fields referable to this document.

PIES can be downloaded from AAIA's website at:

www.aftermarket.org/technology/pies.aspx

PDF Best Practices

Overview

In the Aftermarket today, with the exception of product images, PDFs are distributed to trading partners more than any other digital asset. As is evident from the PDF Types table below, there are more than 30 types of PDFs.

There are many PDF specifications that creators need to think about when creating, editing and producing PDFs. The majority of these specifications can be addressed by either following a best practice or by contacting your trading partner to understand the specifications that they want you to follow when formatting PDFs. In general, the majority of PDF specifications are determined between trading partners, this document simply lists the specifications and provides a description of each one for your reference and education.

This Best Practice document provides some education on how you publish your PDF to satisfy trading partner specifications and the stages in the PDF publishing process where you address each specification.

Types of PDFs

There are many different types of PDFs that manufacturers will send to their customers including:

PDF Type	Existing Code	New Code
Technical Bulletin	BUL	
Research Bulletin		RES
Hazardous Materials Information Sheet		HMS
Material Safety Data Sheet	MSD	
Certificate of Origin	CER	
Warranty Information	WAR	
Pallet Configuration Drawing	PAL	
Planogram Consumer Pack 1-3	PC1, PC2, PC3	
Planogram Inner Pack 2-3	PI2, PI3	
Planogram Case Pack 1-3	PP1, PP2, PP3	
Specification Sheet Filename	SPE	
Brochure	BRO	
Ebook		EBK
Case Study		CAS
White Paper		WHP
Data Sheet		DAS
Product Specification Sheet		PSS
Features and Benefits		FAB
Line Art	LIN	

Catalog		CAT
Buyers Guide		BUY
Technical Drawing	DRW	
Full Engineering Drawing	FED	
Installation Instruction	INS	
Application Guide		APG
Illustration Guide		ISG
Price Sheet		PST
User Manual		USM
Owner's Manual		OWN
Product Brochure		PDB
User 1 – 9	ZZ1 to ZZ9	

PDF Creation, Editing and Publishing Process

PDF specifications are applied to PDFs at various stages in the PDF publishing process. This publishing process starts by creating your document in Word, a text editor or a design program like InDesign, exporting your document as a PDF, editing your document in a PDF editing application like Adobe Acrobat, and then distributing your PDFs to your trading partners accompanied by a PIES file.

The table below summarizes the steps in the PDF publishing process:

Publishing Process Stage	Description	Tools
Create Document	Create your document using Word, a text document creation application, or a document design application like Adobe InDesign	Microsoft Word Various text editors Adobe InDesign Other design applications
Export to PDF	Save / export the document to PDF. The properties that were defined in the document creation or design application will be maintained in the PDF.	Adobe Acrobat Many free or inexpensive document conversion tools
Edit PDF Properties	Open the PDF up in Adobe Acrobat (or another PDF editing application) and edit the PDF properties to adhere to your trading partner specifications	Adobe Acrobat Other PDF editing applications
Distribute to Trading Partner	The formatted and edited PDF is sent to trading partners adhering to their PDF specifications requirements	FTP DVD creation applications File transfer services

PDF Naming Convention

There is no defined naming convention for PDFs. What is important is that all PDFs that are distributed to trading partners are accompanied by a PIES file. These files associate the PDF file name to other relevant digital asset data (which make the actual file name of the digital asset unimportant). Please refer to our earlier section, "Product Imaging Projects – Maximizing Return on Investment", for some guidance in relation to best practices for naming conventions.

PIES and PDFs

Refer to the most current version of PIES documentation for the PIES tables, codes and fields relevant to product images.

At the time of the latest release of this document PIES 6.4 was the latest version. PIES 6.5 is scheduled for release in April 2013, and will contain all the updated Asset Codes, Types and Fields referable to this document.

PIES can be downloaded from AAIA's website at:

www.aftermarket.org/technology/pies.aspx

PDF Specifications

The table below provides details of the various PDF specifications:

Specification	PDF Publishing Stage	Specification Defined	Action	Notes
File Name	Export / Edit	The name of the PDF file	Include in the appropriate PIES file	You can name the file anything as long as it is associated with) a PIES file. See our notes on tips for naming conventions earlier in this document.
Meta Data	Create / Export / Edit	Meta data includes title, author, subject, date, keywords, description, and copyright. Meta data can be found in the: Document Properties in Word, File Properties in Adobe Acrobat, and File Info. in InDesign	Creator includes meta data in the PDF as they deem appropriate	The meta data in the PDF concerns the PDF creator and not the PDF receiver. The creator has the right to include meta data in the PDF including copyright information
Bookmarks	Export / Edit	Bookmarks automatically take readers to specific areas in the PDF. Bookmarks appear on the left hand side of the PDF	Consult with your trading partners	Bookmarks can be set up using various PDF creation applications
Orientation	Create	Creating your document in portrait or landscape orientation	Consult with your trading partners	
Hyperlinks	Create / Export / Edit	Hyperlinks take readers to specific areas within the PDF or to external websites	Consult with your trading partners regarding the use of internal hyperlinks. PDF receivers do not allow external hyperlinks	Hyperlinks can be set up using various PDF creation applications. Do not include external hyperlinks as PDFs with these types of links will not be accepted by trading partners
Compatibility	Export / Edit	When you export your PDF you define what version of Adobe Acrobat your PDF will be compatible with. Currently in Adobe InDesign the default is Acrobat 5	Consult with your trading partners	In general, the default settings when you export or edit your PDF will be acceptable.

Specification	PDF Publishing Stage	Specification Defined	Action	Notes
Security	Edit / Export	When you edit your PDF in Adobe Acrobat you have the option to apply security to the document including controlling or password protecting opening, printing, editing and other tasks	Do not apply any security to your PDFs	Receivers do not accept PDFs that have security settings on
Initial View	Edit	You can control how the PDF is navigated e.g. by pages only, bookmarks panel and pages, attachments panel and pages, and layers panel and pages	Consult with your trading partners	Navigation is an advance function of PDF
		You can define how you want the page layout to appear to the user – as a single page or two-up	Consult with your trading partners	The typical setting for PDFs is single page layout
		You can edit your PDF such that it magnifies to a specific size or percentage when it is opened. Options include actual size, fit the page, or zoom to a percentage, e.g., 25%, 50%	Consult with your trading partners	It is common to format your PDF to open in its initial view such that readers can clearly see the entire page
		You can define how the PDF appears on the screen e.g., centered on the screen, resized to the original size or displayed in full screen mode	Consult with your trading partners	On screen options are advanced functions of PDF
		You can control the PDF user interface by hiding menu and tool bars and window controls	Consult with your trading partners	On screen options are advanced functions of PDF

Specification	PDF Publishing Stage	Specification Defined	Action	Notes
URL to PDF	Distribute	PDF is hosted with the creator or a 3rd party hosting service and a link is sent to the receiver	Consult with your trading partners	
Distribution	Distribute	Options include FTP, email, physical media, and Internet file transfer service	Consult with your trading partners	
File Size	Export	You can determine what file size you would like to format the PDF to. Options range from high quality print, the largest high resolution file, to the smallest file size for online viewing	Consult with your trading partners	This PDF function is very important when your PDF has graphics and images. High quality print would result in a file far too large to transfer to your trading partners whereas formatting the PDF to the smallest file size my result on poor quality images and graphics. It is recommended that you export your PDF in various file sizes to see which one strikes the best balance between file size and document quality
Compression	Export	You can define the quality of the images in the PDF by adjusting how they are compressed upon export. You can set images to color, grayscale or monochrome and define their quality to minimum, low, medium, high and maximum	Consult with your trading partners	It is recommended that you experiment with various settings to see what the final PDF output looks like. As with the file size, you should try and strike a balance between quality viewing and file size
		You can also compress text and line art to reduce the file size	Consult with your trading partners	As with the file size, you should try and strike a balance between quality viewing and file size
Color Space	Export	There are several export option for color space	sRGB	sRGB is a standard RGB color space created cooperatively by HP & Microsoft 1996 for use on monitors, printers, and the Internet
Optimize	Edit	Allows various optimization settings to reduce the file size like optimizing images and graphics	Consult with your trading partners	Completed after the PDF has been exported with Adobe Acrobat

Video Best Practices

Overview

The majority of businesses today are using or considering using video as a medium to market their products, services, brand and / or company. Before spending the time and allocating the resources to producing videos, there are several issues to consider including:

1. **Ensure that your target audience can view your videos:** The main goal when creating and publishing video is to ensure that your target audience is able to view your videos whenever they want. In order to achieve this goal you will need to produce video that can play in all commonly used browsers and on various devices (see point 2 and 3 below).

2. **Cross-browsers compatibility:** Your target audience will be accessing your videos using a variety of browsers including Internet Explorer, Firefox, Safari, Chrome and Opera. They will also be running various versions of these browsers. The following chart illustrates the market share by browser.

2012	Internet Explorer	Firefox	Chrome	Safari	Opera
March	18.9%	36.3%	37.3%	4.4%	2.3%

3. **Variation in devices used to view video:** Your target audience will be viewing your videos on a variety of devices including desktop and notebook computers, smartphones and tablets. Devices play video differently, for example, if you create Flash videos they will not play on the iPod, iPad or iPhone because Apple does not support Flash.

The 3 Components of Video

When creating and publishing video, it is important to understand the components that make up video. These include containers, video codecs, and audio codecs.

Video Component	Description
Containers	Video container formats define how to store things within them
Video Codecs	Video player decodes the video stream according the video codec
Audio Codecs	Algorithms by which audio stream is encoded

Containers

Video container formats define how to store things within them. The table below includes some of the common video containers.

Container	Description
MP4	• MPEG-4 Part 14 or MP4 is a container format standard specified as a part of MPEG-4. It is most commonly used to store digital video and digital audio streams, especially those defined by MPEG, but can also be used to store other data such as subtitles and still images • .mp4 is the global file extension for the official container format defined in the MPEG-4 standard • To create MP4 files use audio and video formats covered by the MPEG-4 Standard • Allows streaming over the Internet • Common video codec is H.264 (see 'Video Codec' section) • Common audio codec is AAC • Works on Apple devices and plays in Quicktime
Ogg	• Ogg is an open standard and unencumbered by any known patents • Firefox 3.5, Chrome 4, and Opera 10.5 support Ogg container without requiring a plugin • Ogg video is called Theora • Ogg audio is called Vorbis • .ogv extension
WebM	• WebM is a container format designed to provide royalty-free, open video compression for use with HTML5 video • .webm extension • Development is sponsored by Google • All users are granted a worldwide, non-exclusive, no-charge, royalty-free patent license • The WebM project is dedicated to developing a high-quality, open video format for the web that is freely available to everyone • WebM is supported by Mozilla, Opera, Adobe, Google and more than seventy other publishers and software and hardware vendors • It is supported natively, without platform-specific plugins, in the latest versions of Chromium, Google Chrome, Mozilla Firefox, and Opera • Adobe has also announced that a future version of Flash will support WebM video

Flash Video	• Flash Video is a container file format used to deliver video over the Internet using Adobe Flash Player • Flash Video content may also be embedded within SWF files • There are two different video file formats known as Flash Video: FLV and F4V • Flash Video is viewable on most operating systems via the Adobe Flash Player and web browser plugins or one of several third-party programs • Apple's iOS devices do not support the Flash Player plugin • Flash Player supports video compressed in H.264, audio compressed using AAC
AVI	• Audio Video Interleave (AVI), is a container format introduced by Microsoft in November 1992 as part of its Video for Windows technology • AVI files can allow synchronous audio-with-video playback • It does not support features of recent container formats like embedded metadata • It does not even officially support most of the modern video and audio codecs in use today • .avi extension

Video Codecs

Video players decode the video stream according the video codec. The table below includes the three most important video codecs.

Codec	Description
H.264	• H.264 (MPEG-4 AVC) is a standard for video compression, and is currently one of the most commonly used formats for the recording, compression, and distribution of high definition video • H.264 is one of the codec standards for Blu-ray Discs; all Blu-ray Disc players must be able to decode H.264 • Widely used by streaming internet sources, such as videos from Vimeo, YouTube, and the iTunes Store, web software such as the Adobe Flash Player and Microsoft Silverlight • iPhone, iPod, iPad, Apple TV play H.264 • In 2009, the HTML5 working group was split between supporters of Ogg Theora, a free video format whose developers believe is unencumbered by patents, and H.264 which contains patented technology • January 2011, Google announced that they were pulling support for H.264 from their Chrome browser and supporting both Theora and WebM / VP8 to use only open formats

	• Designed for low and high CPU devices • Patent encumbered
Theora	• Theora evolved from the VP3 codec. It is royalty-free codec and not encumbered by patents other than the original VP3 patents, which have been licensed royalty-free • Theora video is developed by the Xiph.Org Foundation and distributed without licensing fees alongside their other free and open media projects, including the Vorbis audio format and the Ogg container • Theora video can be embedded in any container format, although it is most often seen in an Ogg container • Theora is a free lossy video compression format • All major Linux distributions support Theora out-of-the-box, and Mozilla Firefox 3.5 includes native support for Theora video in an Ogg container
VP8	• VP8 is an open video compression format created by On2 Technologies • In 2010, Google purchased On2 and released a specification of the format under the Creative Commons Attribution 3.0 license; it is now royalty free • The WebM Project was launched, featuring contributions from Mozilla, Opera, Google and more than forty other publishers, software and hardware vendors to use VP8 as the video format for HTML5 • In the WebM container format, the VP8 video is used with Vorbis audio • Internet Explorer 9 will support VP8 video playback if the proper codec is installed • Android is WebM-enabled • Flash Player will support VP8 playback in a future release

Audio Codec

Audio codecs are algorithms by which audio stream is encoded. The table below includes the three most important audio codecs.

Codec	Description
MP3	• MPEG-1 or MPEG-2 Audio Layer 3 (MP3), is a patented digital audio encoding format using a form of lossy data compression • MP3 is an audio-specific format designed by the Moving Picture Experts Group (MPEG) as part of its MPEG-1 standard and later extended in MPEG-2 standard • MP3 is a common audio format for consumer audio storage, as well as a de facto standard of digital audio compression for the transfer and playback of music on digital audio players • MP3s can contain up to 2 channels of sound. They can be encoded at different bitrates: 64 kbps, 128 kbps, 192 kbps, and a variety of others from 32 to 320. Higher bitrates mean larger file sizes and better quality audio • MP3 format allows for variable bitrate encoding, which means that some parts of the encoded stream are compressed more than others • MP3s can also be encoded with a constant bitrate • Because MP3 format is patent-encumbered, Linux cannot play MP3 files out of the box • Most portable music player supports standalone MP3 files • MP3 audio streams can be embedded in any video container • Adobe Flash can play both standalone MP3 files and MP3 audio streams within an MP4 video container
AAC	• Advanced Audio Coding (AAC) is a standardized, lossy compression and encoding scheme for digital audio • AAC was standardized in 1997, was chosen by Apple as their default format for the iTunes Store • AAC was designed to provide better sound quality than MP3 at the same bitrate, and it can encode audio at any bitrate. (MP3 is limited to a fixed number of bitrates, with an upper bound of 320 kbps.) • AAC can encode up to 48 channels of sound • The quality for stereo is satisfactory to modest requirements at 96 kbit/s in joint stereo mode • It is supported on Nokia, Android, BlackBerry, and webOS-based mobile phones • The AAC format is patent-encumbered; licensing rates are available online • The AAC format is designed to be playable in real-time on devices with limited CPU power

	• All current Apple products, including iPods, iPhone, iPad, AppleTV, and QuickTime support certain profiles of AAC in standalone audio files and in audio streams in an MP4 video container • Adobe Flash supports all profiles of AAC in MP4, as do the open source MPlayer and VLC video players
Vorbis	• Vorbis is a free software / open source project headed by the Xiph.Org Foundation • Vorbis project produces an audio format specification and software implementation (codec) for lossy audio compression • Vorbis is most commonly used in conjunction with the Ogg container format, this is why it is often referred to as Ogg Vorbis • Vorbis is not encumbered by any known patents and is therefore supported out-of-the-box by all major Linux distributions • Mozilla Firefox 3.5 supports Vorbis audio files in an Ogg container (or Ogg videos with a Vorbis audio track) • Android mobile phones can also play standalone Vorbis audio files • Vorbis audio streams are usually embedded in an Ogg or WebM container, but they can also be embedded in an MP4 or MKV container • Vorbis supports an arbitrary number of sound channels

What Container and Video and Audio Codec to Use?

It is important that your target audience can view your video using any Internet browser and any device. The issue is that browsers and devices do not support a standard container, video codec, and audio codec combination.

The graphic below clearly shows how browsers support video on both PC and MAC:

Source: www.findmebyip.com/litmus/

At the time of writing this guideline, it was not possible to create a single video file that would be universally playable on all browsers and all devices. Therefore, in order to ensure your video is viewed across all browsers and devices, you must export / encode your source video in the following three formats:

	Video 1	Video 2	Video 3
Container	WebM	MP4	Ogg
Video Codec	VP8	H.264 (baseline)	Theora
Audio Codec	Vorbis	AAC (low complexity)	Vorbis

Creating Video in Multiple Formats

The following outlines the steps you will take to capture, edit and encode video in the formats listed above.

Step 1: Video Capturing

It is recommended that you capture the highest quality video you can. Once you have a high quality source video you can encoded this video in formats suitable for internal use and when distributing video to your customers. Below are a few important points to consider when shooting high quality video:

- **Equipment:** The quality of the video camera and microphone can have a big impact on the quality of the source video you produce. If possible, purchase a good quality video camera and microphone.
- **Video Size:** In order to produce high quality video it is recommended that you capture video in high definition at 1920 x 1080 pixels resolution. If you have source video in a high resolution you can downsize it when encoding video formats for internal and external uses.
- **Frame Rate:** The number of individual frames that comprise each second of video you record is the frame rate also known as FPS (frames per second.) The most common frame rates in video are 24, 25 and 30 frames per second. The higher frame rate the smoother objects move in the video.
- **Bite Rate:** Video data, called bits, is saved to a storage media like a flash memory card or hard drive. The amount of video data recorded per second is called a bit rate, and is measured in megabits (one million bits) per second, or Mbps. The more data recorded, the better the quality of your video. Controlling the bit rate not only determines the quality of video but also how long you'll be able to record before running out of memory. Assuming you have enough memory, it is best to capture video at the highest bit rate/quality setting you can. Recommended bit rate is 128 kbps to 192 kbps.

- **Compression:** It is best to capture your video in an uncompressed format like a .wav file. By doing this you will maintain a source video in the highest possible quality which can be compressed when exported to other formats for internal and external use.
- **Sample Rate:** The audio sample rate refers to the number of times a sample of a constant sound source is taken over a unit of time. Recommended sample rate is 44.1 kHz or 48 kHz. Note that the audio sample rate must match the sample rate settings of your video project when you are encoding your video file.

Step 2: Video Editing

After you have captured and before you encode your video you edit it in a video editing application like Final Cut Pro, Adobe Premiere, or Microsoft Movie Maker. These applications allow you to clean up your video, add sections and remove parts that you do not want, add watermarks and overlays and make many other post production alterations to your video. When you have completed this step, save and backup your source video. The processes and techniques involved in video editing are extensive and unique to specific projects and are therefore beyond the scope of this guideline.

Step 3: Video Encoding

Encode three separate videos, one for each video format outlined in the above table. Video encoding is done with video editing software. When you export your source video with your video editing software you define the aspects of the video you are formatting including:

- **Codec and Containers:** Encode your videos according to the 3 video formats listed above.
- **Multi-pass Encoding:** Also known as 2-pass or 3-pass encoding is a technique for encoding video into another format using multiple passes to keep the best quality. The video encoder analyzes the video many times from the beginning to the end before the actual encoding process. While scanning the file, the encoder writes information about the original video to its own log file and uses that log to determine the best possible way to fit the video within the bitrate limits the user has set for the encoding process.
- **Audio Bitrate:** The bit rate is the rate that bits are streamed to play the file over a set length of time. For example, a 192kbps file pushes 192k bits per second at playback. The higher the bitrate the more information is reproduced and so generally the higher quality the video. Your overall bitrate is a combination of your video stream and audio stream in your file with the majority coming from the video stream. Audio bitrate should be set to between 44.1kHz and 320kHz.
- **Video Bitrate:** The bitrate of the video specifies the amount of information stored in the video. The higher the bitrate, the clearer the video. This setting will usually depend on the video resolution. For a basic video a bitrate of between 500Kps and 1Mbs.
- **Video Size (w x h):** If you capture video in high definition (1920 x 1080 pixels) you have the option to resize the video during encoding to whatever size you need for internal use and to satisfy trading partner needs. It is recommended that you check with your

trading partners to determine their required video size. It is important to note that the video dimensions have a significant effect on the video file size. For example, a 320 x 240 pixels video will have a much smaller file size than a 1920 x 1080 pixel video.

- **Frame Rate:** The frame rate when encoding video (the number of individual frames that comprise each second of video you record) should be consistent with the frame rate of the source video.

Video Production & Distribution Considerations

Other than capturing, editing and encoding your video there are several things to consider when producing video for your business. Below are some of these considerations:

Video Quality

The quality of your video can be impacted by many things including video equipment, video resolution, compression, and frame, bit, and sample rate.

Legal Issues

There are many legal issues related to video creation and distribution including securing releases from all people acting or appearing in the video and rights to feature products, services, brands and companies in the video. Consult legal counsel for all copyright and legal matters concerning video production and distribution. Legal issues relating to video are beyond the scope of this guideline.

Content Guidelines

Videos can be promotional, instructional or educational. Regardless of the type of video, all videos contain one form of content or another. Guidelines for this content can be general in nature or detailed. Additionally, content guidelines are dependent on the parties that create and receive the video.

Defining detailed content guidelines for all types of video and for video creators and receivers is beyond the scope of this guideline. The only general, albeit subjective, content guideline worth including in the guideline is one that is obvious to all businesses producing and distributing video – do not publish video content that could be deemed as offensive to your viewers.

Editing

Once you have captured your video it can be edited in video editing software. The most common video editing software is Apple Final Cut Pro and Adobe Premiere. In addition to editing your video, these applications are also used to encode and export your videos for internal use and for distribution to trading partners.

Watermarks and Overlays

Watermarks and overlays can be applied to your videos during the video editing stage. Consult your trading partners to determine if watermarks and overlays are permitted and, if so, what are the restrictions when applying them.

Backup

It is very important to back up all video files, but especially the source video. If individually formatted videos are lost due to a hard drive or system failure they can always be recreated from the source video. If the source video is lost the video will have to be recreated from scratch which is time consuming and costly.

Distribution

Each trading partner will have specific requirements for how they want videos formatted and how they want them delivered (e.g., FTP, physical media, Internet). Check with your trading partners before you encode and export your videos, once you understand their video specifications then proceed with the encoding process.

PIES and Video

Refer to the most current version of PIES documentation for the PIES tables, codes and fields relevant to video.

At the time of the latest release of this document PIES 6.4 was the latest version. PIES 6.5 is scheduled for release in April 2013, and will contain all the updated Asset Codes, Types and Fields referable to this document.

PIES can be downloaded from AAIA's website at:

www.aftermarket.org/technology/pies.aspx

Video and HTML5

HTML5 is being developed by the HTML5 working group as an open standard to be adopted by all web browser developers. HTML5 is the next generation of the HTML standard and has added support for embedding multimedia including video, audio, and dynamic graphics. Video can be directly embedded in web pages with the <video> element without using plug-ins. Prior to HTML5, video was displayed on a web page by embedding the video content using 3rd party plug-ins like Adobe Flash Player, RealPlayer, and QuickTime. If the plug-in was not available or supported the video would simply not play. Case in point, a Flash video would not play on an Apple device.

HTML5 sounds like the savior for having video playing correctly in multiple browsers and on various devices but it is not, at least at the time of writing this guideline. The reasons why HTML5 is not yet the answer include:

1. Currently, there is no single combination of containers and codecs that work in all HTML5 browsers. Google, Apple, Mozilla and Microsoft are still not in agreement on the video formats to support.
2. Currently, HTML5 only supports three video formats – Ogg, MPEG4, and WebM.

3. Currently, Google Chrome is the only browser that supports all formats although they announced that they would be pulling support for H.264 and supporting both Theora and WebM/VP8 to use only open formats.

HTML5 Code for Video

Due to the controversy surrounding HTML5 and the supported video formats, you must create the three video formats outlined earlier in this document. In order to make sure that your video is viewable regardless of the device or browser accessing your video, use HTML5's video element to link to all three source videos. This way you are ensuring that your video will play on the designated web page.

The example below is for a video that will be displayed in a resolution of 320 x 240 pixels. You can see that the HTML includes links to three video formats – MP4, WebM, and Ogg – and their associated codecs.

```
<video width="320" height="240" controls>

        <source src="pr6.mp4"  type='video/mp4;  codecs="avc1.42E01E,
        mp4a.40.2"'>

        <source src="pr6.webm" type='video/webm;  codecs="vp8,  vorbis"'>

        <source src="pr6.ogv"  type='video/ogg;  codecs="theora,  vorbis"'>

</video>
```

Audio Best Practices

Overview

In many industries, audio is becoming a popular digital asset type. Audio is predominantly used for educational or informational content in the form of podcasts but can also be used to help promote products at the point of sale.

The process of creating and distributing audio is similar to video – you record your audio, edit it and then export it in the formats that meet the needs of your business internally and your trading partners externally.

In the following sections, the important aspects of creating, editing and formatting audio files are detailed along with some important items to consider when creating and distributing audio files.

Audio Recording

Below are some considerations when recording high quality audio:

Overall Quality

Similar to recording video, it is best to record your source audio at the highest quality possible. This offers flexibility when it comes to formatting and exporting audio files for your specific uses in the future.

Equipment

If you want to produce good quality audio files you must invest in a good microphone. Your microphone has a significant effect on the quality of your audio recording.

Environment

It is important that you control the environment you are recording in as much as possible. Background noise can affect the audio quality considerably and should be eliminated if possible. The clearer the audio is the better experience your listeners will have.

Sample Rate

Sample Rate indicates the number of digital samples taken of an audio signal each second. A high sampling rate produces better quality sound, but it also produces a large file. For this reason you will need to strike a balance between the sample rate and the file size of your recording.

Below are examples of sample rates and the audio quality they are associated to:

Sample Rate	Quality Level	Frequency Range
11,025 Hz	Low-end multimedia	0 – 5,512 Hz
22,050 Hz	High-end multimedia	0 – 11,025 Hz
32,000 Hz	Standard broadcast rate	0 – 16,000 Hz
44,100 Hz	CD	0 – 22,050 Hz
48,000 Hz	Standard DVD	0 – 24,000 Hz
96,000 Hz	High-end DVD	0 – 48,000 Hz

Bit Depth

Bit depth describes the number of bits of information recorded for each sample. Bit depth directly corresponds to the resolution of each sample in a set of digital audio data. Higher bit depth provides greater dynamic range. The table below lists the bit depth for common audio recordings.

Bit depth	Quality
8-bit	Telephony
16-bit	CD
24-bit	DVD
32-bit	Best

Audio Editing

When you have recorded your source audio you will use audio editing software to adjust and fine tune the audio before you format and export individual audio files.

There are several key audio editing software applications including Audacity, Audition, Logic Pro, Soundbooth, and Soundtrack.

The processes and techniques involved in audio editing is beyond the scope of this guideline.

Audio Formatting

As is the case with video, there are multiple audio formats to consider when formatting your source audio files. The table below lists some of the more popular audio formats:

Audio Format	Format Description
Audio Interchange File Format (.aif)	Apple format, not supported by all web browsers or all platforms
Waveform Audio (.wav)	Microsoft, lossless, developed for PC, large file sizes
MPEG-1 Audio Layer 3 (.mp3)	Compressed wav file (1/12th the size), compresses data at a constant bit rate
Windows Media Audio (.wma)	MP3 format for Windows Media Player, compressed three times more than MP3s
Ogg Vorbis (.ogg)	Open source, more compressed than MP3, variable bit rate compression; not accepted by many audio software
Advanced Audio Coding (.aac)	Logical successor to MP3 for medium to high bit rate audio – advanced ways to compress audio
Pulse Code Modulation (.pcm)	High fidelity, uncompressed digital sampling of an analog audio signal
AC3 Audio (.ac3)	Known as Dolby Digital; this format is being replaced by AAC
Musical Instrument Digital Interface (.midi)	MIDI files are extremely small and are supported by many different software applications and Internet browsers

Audio Format Considerations

There are many important considerations before selecting an audio format:

Ability to compress sound

Audio formats compress audio differently. Depending on the file format you use, the size of your audio file can vary greatly. This will have an impact on the storage space required. Trading partners can also have restrictions on audio file sizes; check with your trading partners before you choose your audio format.

Ability to maintain sound quality

Some audio formats are lossy which means they lose audio data when they are formatted and therefore audio quality is decreased (although it is minimal). Notable lossy formats are lossy aac and mp3. Other formats are lossless which means they do not loss any audio data when they are created and formatted. The best example of a lossless audio format is wav. Lossy audio formats produce files that are much smaller than lossless files.

Universal or software dependence

Some audio formats can be played using any music player without restriction whereas other formats restrict functions like copying and sharing.

Will audio be streamed over the Internet

It is important to consider whether the audio will be streamed over the Internet. Some formats are designed for streaming while other formats may cause delays and interruptions when streaming. The common formats for streaming over the Internet are mp3 and aac.

Format requirements vary between trading partners

It is likely that your trading partners will request specific audio formats. For this reason, it is recommended that you check with your trading partner before formatting your audio files.

Use of audio files

Before you format your audio files it is important to consider what they will be used for. Considerations include:

- Will they be played in a Browser? If so, check to see which browsers the audio format is compatible with
- Will they be played on mobile devices? If so, choose an audio format that is bandwidth friendly
- Will the audio be short or long? You may consider formatting short audio files differently than long file when balancing audio quality and file size

Audio Formatting Specifications

The table below lists some general recommendations for formatting your audio files:

Specification Category	Specification / Description
File Format	The file format you choose will depend on the use of the file and the trading partner the file will be sent to
Sample Rate	8,000 Hz to 96,000 Hz
Sample Type	8 to 32 Bit & 32 Bit Float
Bitrate	16 Kbps to 320 Kbps
Frequency	5.5 kHz to 48 kHz
Mono or Stereo	This depends on the audio quality required, most audio will be in stereo
Compression	Some formats offer several compression options when formatting
Quality Mode	Best quality vs. fastest

Formatting Export Comparison Table

The table below demonstrates the bitrate audio should be formatted to in order to play with a specified sound quality.

Sound Quality	MP3	WMA	AAC
FM Radio	96 kbps	96 kbps	96 kbps
OK	128 kbps	128 kbps	128 kbps
Good	192 kbps	160 kbps	160 kbps
High Quality	224 kbps	192 kbps	192 kbps
CD Quality	320 kbps	256 kbps	256 kbps

Audio File Distribution

Audio files can be sent to trading partners via FTP, on physical media and over the Internet. In some cases, your trading partners may accept a link to the audio file. Check with your trading partner to determine how they would like you to distribute audio files to them.

PIES and Audio

Refer to the most current version of PIES documentation for the PIES tables, codes and fields relevant to audio.

At the time of the latest release of this document PIES 6.4 was the latest version. PIES 6.5 is scheduled for release in April 2013, and will contain all the updated Asset Codes, Types and Fields referable to this document.

PIES can be downloaded from AAIA's website at:

www.aftermarket.org/technology/pies.aspx

Appendix A: Image Management and Distribution

There are many aspects of image management and distribution that are important to all supply chain participants including;

- Image library management: This includes managing images by part number, trading partner, image views, date images captured, date images delivered, etc.
- Image coverage management: This includes managing images that have and have not been captured and delivered to trading partners.
- Image delivery management: This includes managing when and which images are delivered to trading partners.
- Image delivery procedures: This includes the procedures that retailers and electronic catalog providers establish for delivering images and image related data.
- Supplier approval / reject procedures: This includes the procedures established by trading partners for the approval and rejection of images.
- Image update procedures: This includes the procedures for sending replacement images to trading partners.

Although these issues and procedures are very important, for the most part they are managed between trading partners and therefore not within the scope of the Imaging Workgroup Best Practices Guidelines.

Appendix B: Image Protection, Copyright and Ownership

The issues regarding the protection, copyright and ownership of images as they are traded throughout the supply chain is a concern to both the creator of the images and the trading partner who is using the images. The main area of concern is the use of the images for electronic purposes; online catalogs, Extranets, and e-commerce sites. Images published online are vulnerable to misappropriation. The image creator (the supplier) requires an assurance that their images are being reasonably protected while in use by their trading partners against theft and misuse. The receivers of the images (the retailers and eCat providers) require the flexibility to use the images in various marketing capacities in order to maximize their ability to sell parts. The following are the Workgroup recommendations regarding image protection, copyright and ownership;

- **Image Protection:** This issue involves protecting the creator's images while they are in use by the trading partner for both print and electronic purposes.
    - **Image Watermarks:** The majority of retailers and eCat providers feel that watermarks are a distraction to the viewer of the image and should therefore not be used. Although, in certain cases trading partners will accept watermarked images. It is recommended that before watermarks are applied each trading partner's policy regarding this issue is reviewed.
    - **Intended Image Use:** All retailers and eCat providers are using the images for the purpose of selling more of the right parts to the right customers. The workgroup consensus is that the image receivers will protect the images electronically to the best of their ability and they will discontinue using the images if the image creator no longer supplies the parts that the images represent to the trading partner.
    - **Legal Agreements:** Some retailers and eCat providers are prepared to enter into legal agreements with the image creators addressing the use, protection, and ownership of the images. The image creators should check with their trading partners to discuss possible legal agreements that protect the image creator's asset (the images).
- **Ownership and Copyright:** This issue addresses image copyright and ownership:
    - The issue of copyright and ownership involves determining whether or not the creator of the images owns the copyright to the images after they have been distributed to supply chain trading partners. In other words, does the copyright of the image transfer to the trading partner or is it retained by the image creator. The Workgroup's viewpoint is that ownership and copyright of the images is a legal issue between trading partners and therefore not within the scope of the Workgroup's discussions. Ultimately the ownership of and right to use an image will be governed by the agreement between the image creator and the trading partner.

Appendix C: Additions, Suggestions and Feedback Process

This document is the result of a collaborative effort between a diverse group of retailers, manufacturers, and electronic catalog and solution providers. Overtime, and as a result of feedback from the industry some of the recommendations in this guideline may be changed and updated. The Imaging Workgroup encourages as much feedback as possible from the Automotive Aftermarket. To provide feedback to the Imaging Workgroup follow the process below;

1. Contact an Imaging Workgroup member or a member of AAIA's Standards and Technology Committee by writing to technology@aftermarket.org.
2. Explain the issue(s) or make a recommendation(s).
3. The issue(s) or recommendation(s) will be brought up and discussed by the members of the Imaging Workgroup at regularly scheduled meetings.
4. The Imaging Workgroup will make a recommendation(s) which will be included in the next updated version of the Digital Asset Best Practices Guideline.
5. The recommendation(s) will be published by AAIA in the latest version of the guideline.

Appendix D: Marketing Copy Use Cases

Market Copy Segment

Definition and Use:

The Market Copy Segment is an Optional segment of the PIES Standard, intended for use to express general marketing content of up to 2000 characters of freeform Marketing Copy, Feature and Benefits marketing bullets, and/or collateral digital assets; which relate to a company, division of a company, a brand, a sub-brand, a Part Terminology, a Product Category, Product Sub-Category, or a Category Code.

The Market Copy Segment is NOT intended to be used to convey objective details or specifications relating to an item. Item-level descriptive content is intended to be conveyed in the Description Segment (C01) of the PIES Standard. The Description Segment has provisions for Long Descriptions (Code EXT is 240 characters), Short Descriptions (SHO), Descriptions for the Point of Sale (POS) systems, and other such descriptive content. While there is a specific Market Copy (Code MKT is 2000 characters in length), it is used solely to convey specific marketing-oriented content for the item. Collateral material, such as product-specific images, product-specific instruction or installation manuals, and other such digital assets in respect to an Item is intended to be conveyed in the ITEM ->Digital Assets Segment (P01-P99).

Example of Use:

In PIES 6.5, The Market Copy Segment has been designed to loop at the root of the PIES structure, to enable the inclusion of multiple content elements in a single PIES file. For example, a manufacturer could include both marketing copy about the Company, and marketing copy about a Brand (using Segment Code A82 and the value "BPR" (Brand Parent) to identify the following record pertains to the Company) Segment Code A83 would be populated with the 4-character AAIA Parent Brand Code assigned to that Company. The subsequent loop would populate A82 with "BRD" to indicate the following record was a Brand Statement, and Segment Code A83 would be populated with the 4-character AAIA Brand Code assigned to that Brand.

The same treatment would apply for different Designators and Code combinations. Based upon the A82 and A83 Designator and Code, a receiver will link the Market Copy contained in A87 to the relevant parts, as additional reference information.

Technical Description

In PIES 6.5, The Market Copy Segment defines the Market Copy Content field (A87), of up-to 2000 characters, at several category levels above the Part Number. The Market Copy Code in field #A82 (see Market Copy Code Table below) defines the level at which the supplier wishes to provide a marketing statement. The Market Copy Reference field contains the supplier-provided code (e.g. the AAIA Brand ID) that is used by the receiver to link all of that supplier's Part Numbers to the related Market Copy Content field (A87). The segment "loops" on Market Copy Code, Market Copy Reference and Language Code.

NOTE: The fields in the Market Copy segment have been redesigned and renumbered for use in PIES 6.5 and to accommodate certain enhancements. While the fields described above exist in previous versions of PIES, their enumeration and sequencing is different from the current PIES standard.

Digital Asset Sub-Segment of Marketing Copy

The Digital Asset Sub-Segment of Marketing Copy is used to relay information about any media types which support the related Marketing Copy Segment Reference Codes. The available Reference Codes include AAIA Brand or Sub-Brand, Brand Owner, Parent Company, AAIA Part Terminology, Suppliers Product Group or Sub-Group, AAIA Product Category (NPD) or several User-Defined codes. The Asset Type Table (M10/P10) is used to identify what type of digital asset is being defined. For a full list of reference codes, please refer to PIES Technical Documentation - ASST Segment Codes.

M01-M99 Digital Asset Loop (Market Copy Segment)

The Digital Asset Loop of the Market Copy Segment (M01-M99) is an exact replica of the main Digital Asset Loop of the Item Segment. Please refer to Use of the Digital Asset Segment (P01-P99) for details, in conjunction with the Digital Asset Best Practice Guideline, available at www.aftermarket.org.

Market Copy Segment Code	Code Description
A81	Maintenance Type
A82	Market Copy Code
A83	Market Copy Code Reference
A84	Market Copy Sub Code
A85	Market Copy Sub Code Reference
A86	Market Copy Type
A87	Market Copy Content
A88	Record Sequence
A89	Language Code

The Market Copy Code Table for field A83 contains the following designators:

Market Copy Code Table (A82) (PIES 6.5)

Code	Code Description	Field # - Market Copy Reference Requirements
BRD	AAIA Brand	AAIA Brand ID Code (4 Char)
BOW	AAIA Brand Owner	AAIA Brand Owner Code (4 Char)
BPR	AAIA Brand Parent	AAIA Brand Parent Code (4 Char)
SBR	AAIA SubBrand	AAIA SubBrand ID Code (4 Char)
PTI	AAIA Part Terminology	AAIA PCDB Part Terminology
PGC	Product Group	Manufacturer assigned Major Product Category as assigned in <Group> (B60)
PSG	Product SubGroup	Manufacturer-assigned Minor Product Category as assigned in <SubGroup> (B61)
PCC	AAIA Product Category Code	Category Management Product Category Code

Market Copy Type Codes (A86)

Code	Code Description	Market Copy Content Requirements
FAB	Features and Benefits	Insert only 1 record in Market Copy Content – do not use delimiters – send multiple elements
GCC	General Copy	Use to send general information in large paragraphs. Send only one paragraph per element.