Standard (Plug-in Neutral) Metadata Format Specification

The plug-in neutral "javax\_imageio\_1.0" format consists of a root node named "javax\_imageio\_1.0" which has child nodes "chroma", "compression", "dimension", "document", "text", "tile", and "transparency". The format is described by the following DTD:

<!DOCTYPE "javax\_imageio\_1.0" [  
  
 <!ELEMENT "javax\_imageio\_1.0" (Chroma?, Compression?, Data?, Dimension?,   
 Document?, Text?, Transparency?)>  
  
 <!ELEMENT "Chroma" (ColorSpaceType?, NumChannels?, Gamma?,   
 BlackIsZero?, Palette?, BackgroundIndex?, BackgroundColor?)>  
 <!-- Chroma (color) information -->   
  
 <!ELEMENT "ColorSpaceType" EMPTY>  
 <!-- The raw color space of the image -->   
 <!ATTLIST "ColorSpaceType" "name" ("XYZ" | "Lab" | "Luv" |   
 "YCbCr" | "Yxy" | "YCCK" | "PhotoYCC" | "RGB" | "GRAY" | "HSV" |   
 "HLS" | "CMYK" | "CMY" | "2CLR" | "3CLR" | "4CLR" | "5CLR" |   
 "6CLR" | "7CLR" | "8CLR" | "9CLR" | "ACLR" | "BCLR" | "CCLR" |   
 "DCLR" | "ECLR" | "FCLR") #REQUIRED>  
  
 <!ELEMENT "NumChannels" EMPTY>  
 <!-- The number of channels in the raw image, including alpha -->   
 <!ATTLIST "NumChannels" "value" #CDATA #REQUIRED>  
 <!-- Data type: List of Integer -->  
  
 <!ELEMENT "Gamma" EMPTY>  
 <!-- The image gamma -->   
 <!ATTLIST "Gamma" "value" #CDATA #REQUIRED>  
 <!-- Data type: Float -->  
  
 <!ELEMENT "BlackIsZero" EMPTY>  
 <!-- True if smaller values represent darker shades -->   
 <!ATTLIST "BlackIsZero" "value" ("TRUE" | "FALSE") "TRUE">  
  
 <!ELEMENT "Palette" (PaletteEntry)\*>  
 <!-- Palette-color information -->   
  
 <!ELEMENT "PaletteEntry" EMPTY>  
 <!-- A palette entry -->   
 <!ATTLIST "PaletteEntry" "index" #CDATA #REQUIRED>  
 <!-- The index of the palette entry -->   
 <!-- Data type: Integer -->  
 <!ATTLIST "PaletteEntry" "red" #CDATA #REQUIRED>  
 <!-- The red value for the palette entry -->   
 <!-- Data type: Integer -->  
 <!ATTLIST "PaletteEntry" "green" #CDATA #REQUIRED>  
 <!-- The green value for the palette entry -->   
 <!-- Data type: Integer -->  
 <!ATTLIST "PaletteEntry" "blue" #CDATA #REQUIRED>  
 <!-- The blue value for the palette entry -->   
 <!-- Data type: Integer -->  
 <!ATTLIST "PaletteEntry" "alpha" #CDATA "255">  
 <!-- The alpha value for the palette entry -->   
 <!-- Data type: Integer -->  
  
 <!ELEMENT "BackgroundIndex" EMPTY>  
 <!-- A palette index to be used as a background -->   
 <!ATTLIST "BackgroundIndex" "value" #CDATA #REQUIRED>  
 <!-- Data type: Integer -->  
  
 <!ELEMENT "BackgroundColor" EMPTY>  
 <!-- An RGB triple to be used as a background -->   
 <!ATTLIST "BackgroundColor" "red" #CDATA #REQUIRED>  
 <!-- The red background value -->   
 <!-- Data type: Integer -->  
 <!ATTLIST "BackgroundColor" "green" #CDATA #REQUIRED>  
 <!-- The green background value -->   
 <!-- Data type: Integer -->  
 <!ATTLIST "BackgroundColor" "blue" #CDATA #REQUIRED>  
 <!-- The blue background value -->   
 <!-- Data type: Integer -->  
  
 <!ELEMENT "Compression" (CompressionTypeName?, Lossless?,   
 NumProgressiveScans?, BitRate?)>  
 <!-- Compression information -->   
  
 <!ELEMENT "CompressionTypeName" EMPTY>  
 <!-- The name of the compression scheme in use -->   
 <!ATTLIST "CompressionTypeName" "value" #CDATA #REQUIRED>  
 <!-- Data type: String -->  
  
 <!ELEMENT "Lossless" EMPTY>  
 <!-- True if the compression scheme is lossless -->   
 <!ATTLIST "Lossless" "value" ("TRUE" | "FALSE") "TRUE">  
  
 <!ELEMENT "NumProgressiveScans" EMPTY>  
 <!-- The number of progressive scans used in the image encoding -->   
 <!ATTLIST "NumProgressiveScans" "value" #CDATA #REQUIRED>  
 <!-- Data type: Integer -->  
  
 <!ELEMENT "BitRate" EMPTY>  
 <!-- The estimated bit rate of the compression scheme -->   
 <!ATTLIST "BitRate" "value" #CDATA #REQUIRED>  
 <!-- Data type: Float -->  
  
 <!ELEMENT "Data" (PlanarConfiguration?, SampleFormat?, BitsPerSample?,   
 SignificantBitsPerSample?, SampleMSB?)>  
 <!-- Information on the image layout -->   
  
 <!ELEMENT "PlanarConfiguration" EMPTY>  
 <!-- The organization of image samples in the stream -->   
 <!ATTLIST "PlanarConfiguration" "value" ("PixelInterleaved" |   
 "PlaneInterleaved" | "LineInterleaved" | "TileInterleaved")  
 #REQUIRED>  
  
 <!ELEMENT "SampleFormat" EMPTY>  
 <!-- The numeric format of image samples -->   
 <!ATTLIST "SampleFormat" "value" ("SignedIntegral" |   
 "UnsignedIntegral" | "Real" | "Index") #REQUIRED>  
  
 <!ELEMENT "BitsPerSample" EMPTY>  
 <!-- The number of bits per sample -->   
 <!ATTLIST "BitsPerSample" "value" #CDATA #REQUIRED>  
 <!-- A list of integers, one per channel -->   
 <!-- Data type: List of Integer -->  
 <!-- Min length: 1 -->  
  
 <!ELEMENT "SignificantBitsPerSample" EMPTY>  
 <!-- The number of significant bits per sample -->   
 <!ATTLIST "SignificantBitsPerSample" "value" #CDATA #REQUIRED>  
 <!-- A list of integers, one per channel -->   
 <!-- Data type: List of Integer -->  
 <!-- Min length: 1 -->  
  
 <!ELEMENT "SampleMSB" EMPTY>  
 <!-- The position of the most significant bit of each sample -->   
 <!ATTLIST "SampleMSB" "value" #CDATA #REQUIRED>  
 <!-- A list of integers, one per channel -->   
 <!-- Data type: List of Integer -->  
 <!-- Min length: 1 -->  
  
 <!ELEMENT "Dimension" (PixelAspectRatio?, ImageOrientation?,   
 HorizontalPixelSize?, VerticalPixelSize?,   
 HorizontalPhysicalPixelSpacing?, VerticalPhysicalPixelSpacing?,   
 HorizontalPosition?, VerticalPosition?, HorizontalPixelOffset?,   
 VerticalPixelOffset?, HorizontalScreenSize?, VerticalScreenSize?)>  
 <!-- Dimension information -->   
  
 <!ELEMENT "PixelAspectRatio" EMPTY>  
 <!-- The width of a pixel divided by its height -->   
 <!ATTLIST "PixelAspectRatio" "value" #CDATA #REQUIRED>  
 <!-- Data type: Float -->  
  
 <!ELEMENT "ImageOrientation" EMPTY>  
 <!-- The desired orientation of the image in terms of flips and   
 counter-clockwise rotations -->   
 <!ATTLIST "ImageOrientation" "value" ("Normal" | "Rotate90" |   
 "Rotate180" | "Rotate270" | "FlipH" | "FlipV" |   
 "FlipHRotate90" | "FlipVRotate90") #REQUIRED>  
  
 <!ELEMENT "HorizontalPixelSize" EMPTY>  
 <!-- The width of a pixel, in millimeters, as it should be rendered   
 on media -->   
 <!ATTLIST "HorizontalPixelSize" "value" #CDATA #REQUIRED>  
 <!-- Data type: Float -->  
  
 <!ELEMENT "VerticalPixelSize" EMPTY>  
 <!-- The height of a pixel, in millimeters, as it should be   
 rendered on media -->   
 <!ATTLIST "VerticalPixelSize" "value" #CDATA #REQUIRED>  
 <!-- Data type: Float -->  
  
 <!ELEMENT "HorizontalPhysicalPixelSpacing" EMPTY>  
 <!-- The horizontal distance in the subject of the image, in   
 millimeters, represented by one pixel at the center of the   
 image -->   
 <!ATTLIST "HorizontalPhysicalPixelSpacing" "value" #CDATA #REQUIRED>  
 <!-- Data type: Float -->  
  
 <!ELEMENT "VerticalPhysicalPixelSpacing" EMPTY>  
 <!-- The vertical distance in the subject of the image, in   
 millimeters, represented by one pixel at the center of the   
 image -->   
 <!ATTLIST "VerticalPhysicalPixelSpacing" "value" #CDATA #REQUIRED>  
 <!-- Data type: Float -->  
  
 <!ELEMENT "HorizontalPosition" EMPTY>  
 <!-- The horizontal position, in millimeters, where the image   
 should be rendered on media -->   
 <!ATTLIST "HorizontalPosition" "value" #CDATA #REQUIRED>  
 <!-- Data type: Float -->  
  
 <!ELEMENT "VerticalPosition" EMPTY>  
 <!-- The vertical position, in millimeters, where the image should   
 be rendered on media -->   
 <!ATTLIST "VerticalPosition" "value" #CDATA #REQUIRED>  
 <!-- Data type: Float -->  
  
 <!ELEMENT "HorizontalPixelOffset" EMPTY>  
 <!-- The horizonal position, in pixels, where the image should be   
 rendered onto a raster display -->   
 <!ATTLIST "HorizontalPixelOffset" "value" #CDATA #REQUIRED>  
 <!-- Data type: Integer -->  
  
 <!ELEMENT "VerticalPixelOffset" EMPTY>  
 <!-- The vertical position, in pixels, where the image should be   
 rendered onto a raster display -->   
 <!ATTLIST "VerticalPixelOffset" "value" #CDATA #REQUIRED>  
 <!-- Data type: Integer -->  
  
 <!ELEMENT "HorizontalScreenSize" EMPTY>  
 <!-- The width, in pixels, of the raster display into which the   
 image should be rendered -->   
 <!ATTLIST "HorizontalScreenSize" "value" #CDATA #REQUIRED>  
 <!-- Data type: Integer -->  
  
 <!ELEMENT "VerticalScreenSize" EMPTY>  
 <!-- The height, in pixels, of the raster display into which the   
 image should be rendered -->   
 <!ATTLIST "VerticalScreenSize" "value" #CDATA #REQUIRED>  
 <!-- Data type: Integer -->  
  
 <!ELEMENT "Document" (FormatVersion?, SubimageInterpretation?,   
 ImageCreationTime?, ImageModificationTime?)>  
 <!-- Document information -->   
  
 <!ELEMENT "FormatVersion" EMPTY>  
 <!-- The version of the format used by the stream -->   
 <!ATTLIST "FormatVersion" "value" #CDATA #REQUIRED>  
 <!-- Data type: String -->  
  
 <!ELEMENT "SubimageInterpretation" EMPTY>  
 <!-- The interpretation of this image in relation to the other   
 images stored in the same stream -->   
 <!ATTLIST "SubimageInterpretation" "value" ("Standalone" |   
 "SinglePage" | "FullResolution" | "ReducedResolution" |   
 "PyramidLayer" | "Preview" | "VolumeSlice" | "ObjectView" |   
 "Panorama" | "AnimationFrame" | "TransparencyMask" |   
 "CompositingLayer" | "SpectralSlice" | "Unknown") #REQUIRED>  
  
 <!ELEMENT "ImageCreationTime" EMPTY>  
 <!-- The time of image creation -->   
 <!ATTLIST "ImageCreationTime" "year" #CDATA #REQUIRED>  
 <!-- The full year (e.g., 1967, not 67) -->   
 <!-- Data type: Integer -->  
 <!ATTLIST "ImageCreationTime" "month" #CDATA #REQUIRED>  
 <!-- The month, with January = 1 -->   
 <!-- Data type: Integer -->  
 <!-- Min value: 1 (inclusive) -->  
 <!-- Max value: 12 (inclusive) -->  
 <!ATTLIST "ImageCreationTime" "day" #CDATA #REQUIRED>  
 <!-- The day of the month -->   
 <!-- Data type: Integer -->  
 <!-- Min value: 1 (inclusive) -->  
 <!-- Max value: 31 (inclusive) -->  
 <!ATTLIST "ImageCreationTime" "hour" #CDATA "0">  
 <!-- The hour from 0 to 23 -->   
 <!-- Data type: Integer -->  
 <!-- Min value: 0 (inclusive) -->  
 <!-- Max value: 23 (inclusive) -->  
 <!ATTLIST "ImageCreationTime" "minute" #CDATA "0">  
 <!-- The minute from 0 to 59 -->   
 <!-- Data type: Integer -->  
 <!-- Min value: 0 (inclusive) -->  
 <!-- Max value: 59 (inclusive) -->  
 <!ATTLIST "ImageCreationTime" "second" #CDATA "0">  
 <!-- The second from 0 to 60 (60 = leap second) -->   
 <!-- Data type: Integer -->  
 <!-- Min value: 0 (inclusive) -->  
 <!-- Max value: 60 (inclusive) -->  
  
 <!ELEMENT "ImageModificationTime" EMPTY>  
 <!-- The time of the last image modification -->   
 <!ATTLIST "ImageModificationTime" "year" #CDATA #REQUIRED>  
 <!-- The full year (e.g., 1967, not 67) -->   
 <!-- Data type: Integer -->  
 <!ATTLIST "ImageModificationTime" "month" #CDATA #REQUIRED>  
 <!-- The month, with January = 1 -->   
 <!-- Data type: Integer -->  
 <!-- Min value: 1 (inclusive) -->  
 <!-- Max value: 12 (inclusive) -->  
 <!ATTLIST "ImageModificationTime" "day" #CDATA #REQUIRED>  
 <!-- The day of the month -->   
 <!-- Data type: Integer -->  
 <!-- Min value: 1 (inclusive) -->  
 <!-- Max value: 31 (inclusive) -->  
 <!ATTLIST "ImageModificationTime" "hour" #CDATA "0">  
 <!-- The hour from 0 to 23 -->   
 <!-- Data type: Integer -->  
 <!-- Min value: 0 (inclusive) -->  
 <!-- Max value: 23 (inclusive) -->  
 <!ATTLIST "ImageModificationTime" "minute" #CDATA "0">  
 <!-- The minute from 0 to 59 -->   
 <!-- Data type: Integer -->  
 <!-- Min value: 0 (inclusive) -->  
 <!-- Max value: 59 (inclusive) -->  
 <!ATTLIST "ImageModificationTime" "second" #CDATA "0">  
 <!-- The second from 0 to 60 (60 = leap second) -->   
 <!-- Data type: Integer -->  
 <!-- Min value: 0 (inclusive) -->  
 <!-- Max value: 60 (inclusive) -->  
  
 <!ELEMENT "Text" (TextEntry)\*>  
 <!-- Text information -->   
  
 <!ELEMENT "TextEntry" EMPTY>  
 <!-- A text entry -->   
 <!ATTLIST "TextEntry" "keyword" #CDATA #IMPLIED>  
 <!-- A keyword associated with the text entry -->   
 <!-- Data type: String -->  
 <!ATTLIST "TextEntry" "value" #CDATA #REQUIRED>  
 <!-- the text entry -->   
 <!-- Data type: String -->  
 <!ATTLIST "TextEntry" "language" #CDATA #IMPLIED>  
 <!-- The language of the text -->   
 <!-- Data type: String -->  
 <!ATTLIST "TextEntry" "encoding" #CDATA #IMPLIED>  
 <!-- The encoding of the text -->   
 <!-- Data type: String -->  
 <!ATTLIST "TextEntry" "compression" ("none" | "lzw" | "zip" |   
 "bzip" | "other") "none">  
 <!-- The method used to compress the text -->   
  
 <!ELEMENT "Transparency" (Alpha?, TransparentIndex?,   
 TransparentColor?, TileTransparencies?, TileOpacities?)>  
 <!-- Transparency information -->   
  
 <!ELEMENT "Alpha" EMPTY>  
 <!-- The type of alpha information contained in the image -->   
 <!ATTLIST "Alpha" "value" ("none" | "premultiplied" |   
 "nonpremultiplied") "none">  
  
 <!ELEMENT "TransparentIndex" EMPTY>  
 <!-- A palette index to be treated as transparent -->   
 <!ATTLIST "TransparentIndex" "value" #CDATA #REQUIRED>  
 <!-- Data type: Integer -->  
  
 <!ELEMENT "TransparentColor" EMPTY>  
 <!-- An RGB color to be treated as transparent -->   
 <!ATTLIST "TransparentColor" "value" #CDATA #REQUIRED>  
 <!-- Data type: List of Integer -->  
  
 <!ELEMENT "TileTransparencies" (TransparentTile)\*>  
 <!-- A list of completely transparent tiles -->   
  
 <!ELEMENT "TransparentTile" EMPTY>  
 <!-- The index of a completely transparent tile -->   
 <!ATTLIST "TransparentTile" "x" #CDATA #REQUIRED>  
 <!-- The tile's X index -->   
 <!-- Data type: Integer -->  
 <!ATTLIST "TransparentTile" "y" #CDATA #REQUIRED>  
 <!-- The tile's Y index -->   
 <!-- Data type: Integer -->  
  
 <!ELEMENT "TileOpacities" (OpaqueTile)\*>  
 <!-- A list of completely opaque tiles -->   
  
 <!ELEMENT "OpaqueTile" EMPTY>  
 <!-- The index of a completely opaque tile -->   
 <!ATTLIST "OpaqueTile" "x" #CDATA #REQUIRED>  
 <!-- The tile's X index -->   
 <!-- Data type: Integer -->  
 <!ATTLIST "OpaqueTile" "y" #CDATA #REQUIRED>  
 <!-- The tile's Y index -->   
 <!-- Data type: Integer -->  
]>