



ESKO
DIGITAL FILM SET
XMP Definition

20-June-2016

© Copyright 2016 Esko, Gent, Belgium

All rights reserved. This material, information and instructions for use contained herein are the property of Esko. The material, information and instructions are provided on an AS IS basis without warranty of any kind. There are no warranties granted or extended by this document. Furthermore Esko does not warrant, guarantee or make any representations regarding the use, or the results of the use of the software or the information contained herein. Esko shall not be liable for any direct, indirect, consequential or incidental damages arising out of the use or inability to use the software or the information contained herein.

The information contained herein is subject to change without notice. Revisions may be issued from time to time to advise of such changes and/or additions.

No part of this document may be reproduced, stored in a data base or retrieval system, or published, in any form or in any way, electronically, mechanically, by print, photoprint, microfilm or any other means without prior written permission from Esko.

This document supersedes all previous dated versions.

PANTONE® Colors displayed here may not match PANTONE-identified standards. Consult current PANTONE Color Publications for accurate color. PANTONE® and other Pantone, Inc. trademarks are the property of Pantone, Inc. © Pantone, Inc., 2000.

Pantone, Inc. is the copyright owner of color data and/or software which are licensed to Esko to distribute for use only in combination with LWBrix and CTBrix based applications. PANTONE Color Data and/or Software shall not be copied onto another disk or into memory unless as part of the execution of the LWBrix and CTBrix based applications.

PostScript is a Trademark of Adobe Systems, Inc.

XMP is a Trademark of Adobe Systems, Inc. Copyright 2004 Adobe Systems Incorporated and others. All rights reserved. The original version of this source code may be found at <http://adobe.com>.

Microsoft and the Microsoft logo are registered trademarks of Microsoft Corporation in the United States and other countries.

Java and all Java-based trademarks and logos are trademarks or registered trademarks of Sun Microsystems in the U.S. and other countries.

All other product names are trademarks or registered trademarks of their respective owners. Correspondence regarding this publication should be forwarded to:

Esko – Kortrijksesteenweg 1095 - B-9051 Gent – Belgium

Introduction

XMP stands for ‘eXtensible Metadata Platform’. XMP is a labeling technology that allows embedding data about a file, known as metadata, into the file itself. It is a standard defined by Adobe based on a W3C standard called RDF.

The XMP metadata is embedded in the file as an XML packet. The content of the packet is an XML document containing the metadata. The XML document is encapsulated in a binary packet that can be extracted from a file by simply scanning the file without any knowledge about the underlying file format.

In this way metadata embedded in the file is accessible to applications throughout the workflow. E.g.:

- Quality control tools can read the metadata and compare specifications against actual values.
- Asset management applications can read the metadata and use this information to catalogue digital files for fast search and retrieval.

Adobe uses XMP in its own applications like the Creative Suite applications (Acrobat, Illustrator, InDesign, Photoshop...) and has defined a number of XML schemas. The XMP framework was designed to be extensible so that other vendors like Esko can define additional schemas and add their XMP metadata to the file as well.

XMP is an open source initiative. The packet format and the XML schemas are publicly available. Moreover, there is a royalty free SDK that can be downloaded from the Adobe website. The SDK comes in the form of C++ sources.

A lot of background material and the SDK can be found at <http://www.adobe.com>.

Digital Film Sets (LEN, TIFF and PDF files) contain XMP metadata. The XMP metadata is using the Adobe schemas whenever possible. Additional information and Esko specific information are stored in extension schemas.

There is a free Acrobat plug-in for displaying Esko XMP metadata in PDF documents. The plug-in can be downloaded from <http://www.esko.com>.

Software Versions

Esko Software Platform - July 2016

This document describes the XMP metadata embedded in Esko Software Platform – July 2016 Digital Film Sets. XMP metadata is added to digital film sets generated by the following applications:

Imaging Engine

- Imaging Engine 16: TIFF, LEN & PDF output

FlexRip

- FlexRip/C 14.0
- FlexRip/T4 14.0
- FlexRip/TG 14.0
- FlexRip/P 14.0, PDF output

Nexus

- NexusRip 10

Digital Film Sets

A digital film set is the digital output of a RIP process. This output might consist of several 1 bit screened TIFF files, LEN files, etc... each representing one separation of the job that will be printed. The output of the RIP process can also consist of just one file, e.g. a PDF file that bundles all separations of the job to be printed.

Digital films sets produced with Esko software contain embedded XMP metadata.

Besides information about the contents of these TIFF, LEN, PDF, etc... files, the XMP metadata also provides additional information about the RIP process and the original production files (e.g. PDF files) used to create the digital film set.

Terminology

The terminology used in this document comes from the XMP definition document and from XML.

The XMP definition document can be found in the Adobe XMP SDK.

Some clarifications necessary to understand this document:

bag Unordered collection (the order of the items has no significance).

seq Ordered collection

alt A collection of alternative representations for the same thing.

XMP Schema version

In the egDigFilm element the version of the XMP schema in use is stored.
This section is obligatory.

Schema namespace <http://ns.esko-graphics.com/digfilmversion/1.0/>
Schema namespace prefix egDigFilm

Property	ValueType	Description
egDigFilm:version	integer	The Esko XMP schema version of the file.
egDigFilm:structure	String	The digital film set structure. Possible values are: “Single”: this file represents just one separation of one page of the original production file. “Separated”: this file contains multiple separations of the original production file spread over multiple pages, one separation per page “Composite”: this file bundles all separations of one page of the original production file together on one page of the digital film set, on top of each other
egDigFilm:type	String	“Film”: no color management was applied in the RIP “Proof”: color management was applied in the RIP

Example:

```
<rdf:Description rdf:about=''
  xmlns:egDigFilm='http://ns.esko-graphics.com/digfilmversion/1.0/'>
  <egDigFilm:version>100</egDigFilm:version>
  <egDigFilm:structure>Separated</egDigFilm:structure>
  <egDigFilm:type>Film</egDigFilm:type>
</rdf:Description>
```

XMP Basic Schema

The `rdf:Description` element contains basic data about the document. The standard Adobe schema is used for this.

Schema namespace `http://ns.adobe.com/xap/1.0/`
Schema namespace prefix `xmp`

Property	ValueType	Description
<code>xmp:CreateDate</code>	Date	Creation date and time of the document.
<code>xmp:CreatorTool</code>	string	The full name of the program that created the document.
<code>xmp:MetadataDate</code>	Date	The date the metadata was last changed.
<code>xmp:ModifyDate</code>	Date	The date the document was last modified.

The example below shows the `rdf:Description` element of an example file.

```
<rdf:Description rdf:about=''  
  xmlns:xap='http://ns.adobe.com/xap/1.0/'>  
  <xap:CreateDate> 2016-06-20T13:05:04+02:00</xap:CreateDate>  
  <xap:CreatorTool>FlexRip 14.0.3 Jun 10 2016</xap:CreatorTool>  
  <xap:MetadataDate> 2016-06-20T13:05:04+02:00</xap:MetadataDate>  
  <xap:ModifyDate> 2016-06-20T13:05:04+02:00</xap:ModifyDate>  
</rdf:Description>
```


Job

Data about the original Automation Engine job is stored in the XMP data of the digital film set.

The job data is stored in the standard Adobe xmpBJ:JobRef element for job tickets.

Additionally an Esko specific element is written that contains Esko specific data.

Job data is optional. It is added only for digital film sets that originate from an Automation Engine job. The job data included in a digital film set always refers to the Automation Engine job containing the original production file used to generate the digital film set.

XMP Basic Job Ticket Schema

Schema namespace <http://ns.adobe.com/xap/1.0/bj/>

Schema namespace prefix xmpBJ

Property	ValueType	Description
XmpBJ:JobRef	Bag Job	The description of the job that this digital film set originates from. Note: For digital film sets the bag will contain only 1 element.

Job

Schema namespace <http://ns.adobe.com/xap/1.0/sType/DataLocation#>

Schema namespace prefix stLoc

Property	ValueType	Description
stLoc:name	String	Name of the original job in Automation Engine.
stLoc:id	String	Unique ID for the original job: this is the Automation Engine 16.0 job GUID.
stLoc:url	String	URL of the jobfolder on the Automation Engine server.

XMP Esko Job Schema

Schema namespace <http://ns.esko-graphics.com/jobinfo/1.0/>

Schema namespace prefix `egJob`

Property	ValueType	Description
<code>egJob:description</code>	String	Description of the original job on the Automation Engine server.
<code>egJob:orderid</code>	String	Automation Engine order id of the original job
<code>egJob:suborderid</code>	String	Automation Engine suborder id of the original job

The example below shows the job data of a digital film set that was made from a job called 'Eskookies_Box' on an Automation Engine server.

```
<rdf:Description rdf:about=''
  xmlns:stLoc='http://ns.adobe.com/xap/1.0/sType/DataLocation#'
  xmlns:xapBJ='http://ns.adobe.com/xap/1.0/bj/'>
  <xapBJ:JobRef>
    <rdf:Bag>
      <rdf:li rdf:parseType='Resource'>
        <stLoc:name>Eskookies_Box</stLoc:name>
        <stLoc:id>8ce46d46-f0c0-49d3-9380-dd2fb9c6dcba</stLoc:id>
        <stLoc:url>file://mystique/Eskookies_Box</stLoc:url>
      </rdf:li>
    </rdf:Bag>
  </xapBJ:JobRef>
</rdf:Description>

<rdf:Description rdf:about=''
  xmlns:egJob='http://ns.esko-graphics.com/jobinfo/1.0/'>
  <egJob:description>Labels for Eskookies Box</egJob:description>
  <egJob:orderid>Eskookies_Box_2004_09_01</egJob:orderid>
  <egJob:suborderid>3</egJob:suborderid>
</rdf:Description>
```

Graphics

Graphics information is stored in this element.

XMP Esko Graphics Info Schema

Schema namespace

<http://ns.esko-graphics.com/grinfo/1.0/>

Schema namespace prefix

egGr

Property	ValueType	Description
egGr:units	String	“mm” or “pt” (1/72 inch)
egGr:vsize	Double	The vertical size. This is the total vertical size, including the margins from the original production file.
egGr:hsize	Double	The horizontal size. This is the total horizontal size, including the margins from the original production file.
egGr:vresolution	Double	The vertical resolution (dpi)
egGr:hresolution	Double	The horizontal resolution (dpi)
egGr:screenreg	Boolean	Indicates if screen registration was applied during the RIP process that created the digital film set. If screenreg is true, the origin of the screening coordinate system was reset for every external reference to a production file from the original production file.
egGr:vdist	Double	The vertical (hardware) distortion factor that has to be used when imaging this digital film set on an imaging device. The default value (no distortion) is 1.0.
egGr:hdist	Double	The horizontal (hardware) distortion factor that has to be used when imaging this digital film set on an imaging device. The default value (no distortion) is 1.0.
egGr:vscale	Double	The vertical scaling factor that was applied on the original production file during the RIP process that created the digital film set. The default value (no scaling) is 1.0.
egGr:hscale	Double	The horizontal scaling factor that was applied on the original production file during the RIP process that created the digital film set. The default value (no scaling) is 1.0.
egGr:reverse	boolean	False when the digital film set is

		positive, true when the digital film set is negative. Positive for screened digital film set means that value 1 in the digital film set corresponds to a black pixel. Positive for grayscale digital film set means that value 255 in the digital film set corresponds to a black pixel.
egGr:scanlinedirection	integer	The orientation of the digital film set compared to the original production file. Scanlinedirection has a value between 0 and 7.
egGr:inks	<i>seq Ink</i>	The ordered list of inks of this digital film set. One ink in this list can be considered as the representation of one “separation”.
egGr:ninksoriginal	integer	The total number of inks that was present in the original production file.
egGr: colorprofloc	enumeration	The location of the document’s color profile. Possible values are: <ul style="list-style-type: none"> • “Untagged”: the document is untagged. • “EGDatabase”: the profile is stored in the Color Engine Pilot database. Note: If this attribute is not present this is equivalent to “Untagged”.
egGr:colorprofdesc	string	A GUI description of the color profile.
egGr:colorprofname	string	The name of the color profile. When egGR:colorprofloc=“EGDatabase”, this is the name of the Color Engine Pilot profile. It is “” or the attribute is not present in other cases.
egGr:margtop	double	Top margin (from film top to transformed borders top)
egGr:margbot	double	Bottom margin (from film bottom to transformed borders bottom)
egGr:margleft	double	Left margin (from film left to transformed borders left)
egGr:margright	double	Right margin (from film right to transformed borders right)

Ink

Schema namespace

<http://ns.esko-graphics.com/inkinfo/1.0/>

Schema namespace prefix

egInk

egInk:name	string	The name of the ink
egInk:type	string	The type of the ink. It should be either: <ul style="list-style-type: none">• process• pantone• designer
egInk:book	string	Optional field. It should be one of the BGCMS ink book names, or "none" for unregistered inks
egInk:egname	string	Optional field. Should be the internal (BGCMS) ink name
egInk:r	double	The red component of the sRGB equivalent of a 100% patch of the ink. Intensities are defined between 0.0 (no intensity) and 1.0 (full intensity)
egInk:g	double	The green component of the sRGB equivalent of a 100% patch of the ink
egInk:b	double	The blue component of the sRGB equivalent of a 100% patch of the ink
egInk:attribute	string	The attribute of the ink as specified in one of the Graphic Editors. It should be either: <ul style="list-style-type: none">• normal• opaque• varnish• technical
egInk:opacity	double	The opacity of the ink. Opacity has a value between 0.0 and 1.0. A value of 0.0 means completely transparent, 1.0 means completely opaque.
egInk:inknroriginal	string	Several inks of the original production file might have been taken together to create one digital film set ink or "separation". This key contains a comma-separated list of the indexes of those "production file" inks, referring to their position in the printing sequence of the original production file. See the <i>Used References</i> section in this document for information about the original production file.

Remarks

☞ Merged digital film sets

Digital film sets that are the result of a merge operation will only have a limited number of the properties mentioned above. The only graphics information present in case of a merged digital film set is:

- egGr:units
- egGr:vsize
- egGr:hsize
- egGr:vresolution
- egGr:hresolution

☞ *egGr:nrinksoriginal* and *egInk:inknroriginal* info

These entries are only present in the XMP data of the digital film set if the printing sequence of the original document is known at RIP time.

☞ Definition of horizontal and vertical

The terms vertical and horizontal are to be interpreted in the following way:

- horizontal = fast scan direction of pixel storage in the digital film set file
- vertical = slow scan direction of pixel storage in the digital film set file

☞ Distortion and scale factors in digital film set versus distortion factors in the original production file

The original production file (e.g. PDF file) might contain distortion values that need to be taken into account while imaging, to compensate for the distortion that happens during the printing process. Another term that is often used for distortion values is “shrink” values.

If the digital film set is to be exposed on an imaging device that supports distortion, then *distortion is not applied, neither is the distortion translated in an extra scaling factor* during the RIP process. The distortion is interpreted *afterwards* by the imaging device, at the moment the digital film set is exposed on the device.

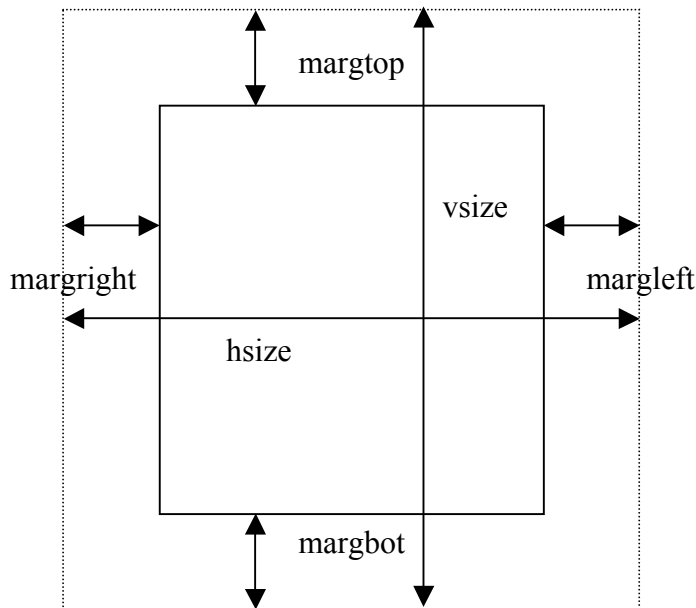
The *egGr:vdist* and *egGr:hdist* properties of the digital film set will in this case reflect the distortion values that have to be applied by the imaging device, these values will be the same ones as the ones set in the original production file.

If the imaging device does not support distortion, then the *distortion values are translated into an extra scaling factor during the RIP process*. This extra scaling is added to the “normal” scale factor. The “normal” scale factor is the one that can be set by the user. It is one of the parameters for the RIP process.

In this case the *egGr:vscale* and *egGr:hscale* properties of the digital film set will show the original scaling, while the *egGr:vdist* and *egGr:hdist* properties will show the distortion that was asked (and already calculated through the combined scaling factor).

This is required to allow viewers to compensate for distortion, when comparing the original production file with the corresponding digital film (set).

☞ Definition of sizes and margins



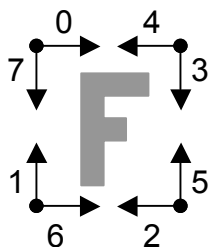
The rectangle defined by *vsize* and *hsize* encloses the complete digital film data. The margins define the extra space around the borders of the (transformed) production file, i.e. the inner rectangle corresponds to the media box of the PDF production file (possibly rotated and/or mirrored).

This is different from the XMP information in the PDF production files (where *vsize* and *hsize* define the size of the media box, and the margins are around it).

















☞ Definition of the eight scanlinedirection values

After the RIP process, the orientation of the digital film set might be different from the orientation of the original production file. RIP options that result in an orientation change are left/right mirroring and rotation over multiples of 90°. In total, this can result in eight different digital film set orientations, independently of the number of transformations that were performed or the order in which they were performed. Each of these resulting digital film set orientations can be defined in an unambiguous way by specifying how the scanline direction and scanline origin in the digital film set are positioned compared to the *original production file*.

The picture below shows the original production file and the eight possibilities for the scanline orientation.



In the table below, these eight different values are listed, together with the original production file, the resulting digital film set and a possible set of transformations to obtain that specific digital film set orientation (using left/right mirroring and clockwise rotations of 180° and 90°).

Production file	Transformations during the Rip process	Digital film set	Scanlinedirection Value
	No transformation		0
	1. Clockwise rotation of 90°		1
	1. Clockwise rotation of 180°		2
	1. Clockwise rotation of 180° 2. Clockwise rotation of 90°		3
	1. Mirror left/right		4
	1. Mirror left/ right 2. Clockwise rotation of 90°		5
	1. Mirror left/right 2. Clockwise rotation of 180°		6
	1. Mirror left/right 2. Clockwise rotation of 180° 3. Clockwise rotation of 90°		7

☞ Opacity of inks

There are two properties in the ink element that provide information about the opacity of an ink: *egInk:attribute* and *egInk:opacity*.

When the *egInk:attribute* property has “*opaque*” or “*technical*” as value, an opacity of 100% must be used when viewing this ink in combination with other inks (overprint).

In case the *egInk:attribute* has “*normal*” or “*varnish*” as value, the opacity value that must be used for viewing purposes is the value that is stored in the *egInk:opacity* property.

Example: A digital film set with a 'cyan' separation and a 'warm red' separation

```
<rdf:Description rdf:about=''
  xmlns:egGr='http://ns.esko-graphics.com/grinfo/1.0/'
  xmlns:egInk='http://ns.esko-graphics.com/inkinfo/1.0/'>
  <egGr:screenreg>False</egGr:screenreg>
  <egGr:nrinksoriginal>5</egGr:nrinksoriginal>
  <egGr:units>mm</egGr:units>
  <egGr:vsize>369.12</egGr:vsize>
  <egGr:hsize>329.51</egGr:hsize>
  <egGr:vresolution>2540</egGr:vresolution>
  <egGr:hresolution>2540</egGr:hresolution>
  <egGr:vdist>1</egGr:vdist>
  <egGr:hdist>1</egGr:hdist>
  <egGr:vscale>1</egGr:vscale>
  <egGr:hscale>1</egGr:hscale>
  <egGr:reverse>False</egGr:reverse>
  <egGr:scanlinedirection>0</egGr:scanlinedirection>
  <egGr:inks>
    <rdf:Seq>
      <rdf:li rdf:parseType='Resource'>
        <egInk:name>cyan</egInk:name>
        <egInk:type>process</egInk:type>
        <egInk:r>0</egInk:r>
        <egInk:g>0.6491359199</egInk:g>
        <egInk:b>0.9085555437</egInk:b>
        <egInk:attribute>normal</egInk:attribute>
        <egInk:opacity>0</egInk:opacity>
        <egInk:inknroriginal>2</egInk:inknroriginal>
      </rdf:li>
      <rdf:li rdf:parseType='Resource'>
        <egInk:name>warm red</egInk:name>
        <egInk:type>pantone</egInk:type>
        <egInk:r>1</egInk:r>
        <egInk:g>0.2647715092</egInk:g>
        <egInk:b>0.1723741658</egInk:b>
        <egInk:attribute>normal</egInk:attribute>
        <egInk:opacity>0</egInk:opacity>
        <egInk:inknroriginal>1</egInk:inknroriginal>
      </rdf:li>
    </rdf:Seq>
  </egGr:inks>
</rdf:Description>
```

Screening

Screening information is stored in this element

XMP Esko Screening Info Schema

Schema namespace <http://ns.esko-graphics.com/screencontainer/1.0/>
Schema namespace prefix egScreenC

Property	ValueType	Description
egScreenC:screencontainer	<i>seq</i> egScreenL:ScreenL	An ordered list of screen bags. Every bag of screens in this list represents the screens used for a particular ink from the list of inks (see <i>Graphics</i> section in this document). They are linked by their index in the lists.

ScreenL

Schema namespace <http://ns.esko-graphics.com/screenlist/1.0/>
Schema namespace prefix egScreenL

Property	ValueType	Description
egScreenL:screens	<i>bag</i> egScreen:Screen	The bag of screens used for a particular ink.

Screen

Schema namespace <http://ns.esko-graphics.com/screeninfo/1.0/>
Schema namespace prefix egScreen

Property	ValueType	Description
egScreen:frequencyreq	double	The requested LPI (lines per inch) of the screen.
egScreen:frequency	double	The actual LPI (lines per inch) of the screen.
egScreen:anglereq	double	The requested angle of the screen. The angle direction is determined by egScreen:angledirection
egScreen:angle	double	The actual angle of the screen. The angle direction is determined by egScreen:angledirection
egScreen:angledirection	string	The direction of the angles. Possible values are “CW” for

		clockwise and “CCW” for counter clockwise. When the attribute is not present the reader should assume a clockwise angle direction
egScreen:dotshapereq	string	The requested dot shape of the screen.
egScreen:dotshape	string	The actual dot shape of the screen.
egScreen:dotname	string	The actual full name of the dot (default == dotshape)
egScreen:singlepressDGC	string	The single dot gain compensation press curve used for the screen. This entry contains the name of a dot gain compensation curve.
egScreen:autoplateDGCreq	string	The requested automatic plate dot gain compensation. This entry contains the name of a screen-based dot gain compensation curve or a dot gain compensation strategy.
egScreen:autoplateDGCLW	string	The actual automatic plate dot gain compensation for the linework parts of the job. This entry contains the name of a single dot gain compensation curve.
egScreen:autoplateDGCCT	string	The actual automatic plate dot gain compensation for the contone parts of the job. This entry contains the name of a single dot gain compensation curve.
egScreen:autopressDGCreq	string	The requested automatic press dot gain compensation. This entry contains the name of a screen-based dot gain compensation curve or a dot gain compensation strategy.
egScreen:autopressDGCLW	string	The actual automatic press dot gain compensation for the linework parts of the job. This entry contains the name of a single dot gain compensation curve.
egScreen:autopressDGCCT	string	The actual automatic press dot gain compensation for the contone parts of the job. This entry contains the name of

		a single dot gain compensation curve.
egScreen:totalDGCCT	string	The name of a DGC curve in the DGC Curves section (see below). The DGC curve referred to by this attribute is the concatenated DGC curve for contones.
egScreen:totalDGCLW	string	The name of a DGC curve in the DGC Curves section (see egDGC:name). The DGC curve referred to by this attribute is the concatenated DGC curve for linework.
egScreen:gamma	string	The gamma or eskocal calibration used for the screen.
egScreen:usedrefs	string	Comma separated list of indexes. An index is a zero based number indicating an entry in the list of <i>Used References</i> for which this screen was used.

☞ Grayscale digital film sets

The screens information for grayscale digital film sets only contains information about dot gain compensation (*egScreen:*DGC**), gamma compensation (*egScreen:gamma*) and the used references (*egScreen:usedrefs*). The following properties are not present:

- egScreen:frequencyreq
- egScreen:frequency
- egScreen:anglereq
- egScreen:angledirection
- egScreen:angle
- egScreen:dotshapereq
- egScreen:dotshape
- egScreen:dotname

These properties are not relevant when the digital film set is not screened and are thus omitted for a grayscale digital film set.

☞ *egScreen:frequencyreq* versus *egScreen:frequency*,
egScreen:anglereq versus *egScreen:angle*

These entries correspond to the values that were originally set up (thus *requested*) in the production file for screen frequency (also called “screen ruling”) and screen angle. These requested values are not necessarily the values that will be used for ripping. Often only a limited number of frequencies and angles are available to the RIP process. In that case the nearest frequency or angle available will be taken.

The *egScreen:frequency* and *egScreen:angle* properties will reflect the *actual* frequency and angle values that are used for the RIP process.

☞ *egScreen:dotshapereq* versus *egScreen:dotshape*

In the current implementation, both entries will always have the same contents: the actual dot shape that was used during the RIP process. This might change in the future.

☞ Dot gain compensation

Three dot gain compensation curves can be set up as options for the RIP process.

There is the *single press dot gain compensation curve*, used for all screens and inks in a job. The name of this curve is stored in the *egScreen:singlepressDGC* property.

There is the *automatic press dot gain compensation curve*, this can be either a screen-based dot gain compensation curve or a dot gain compensation strategy, stored in *egScreen:autoplateDGCreq*.

This automatic curve is resolved to a single dot gain compensation curve during the RIP process, based on ink and screen properties and also on whether the data being ripped is continuous tone or linework. The names of these single curves used for linework and contone can be found in the *egScreen:autoplateDGCLW* and *egScreen:autoplateDGCCT* properties.

The last dot gain compensation option one is the *automatic plate making dot gain compensation curve*. This is again a screen-based dot gain compensation curve or a dot gain compensation strategy, stored in *egScreen:autopressDGCreq*.

The resulting single curves can be found in *egScreen:autopressDGCLW* and *egScreen:autopressDGCCT*.

☞ Definition of the gamma format

The gamma property contains either the data of a simple gamma calibration or the data of an EskoCal calibration (for more information see the FlexRip Configurator Documentation).

- Gamma calibration: this is a string representation of a single double value.
- EskoCal calibration: this is a string of key/value pairs, separated by the“|” character.

Example of EskoCal calibration string:

```
“res=1200|lpi=0|dot=K|res=1200|rev=0|P9=9|P18=18|P66=66|P151=100|M20=20|M50=50|M80=80|1=1|2=2|3=3|...|99=99”
```

“rev” means “reverse” (0 = positive, 1 = negative)

Example: A sequence of 2 bags of screens, one for each separation.

```
<rdf:Description rdf:about=' '
  xmlns:egScreen='http://ns.esko-graphics.com/screeninfo/1.0/'
  xmlns:egScreenC='http://ns.esko-graphics.com/screencontainer/1.0/'>
  <egScreenC:screenContainer>
    <rdf:Seq>
      <rdf:li rdf:parseType='Resource'>
        <egScreenC:screens>
          <rdf:Bag>
            <rdf:li rdf:parseType='Resource'>
              <egScreen:singlepressDGC>midtone_m_5.dgc</egScreen:singlepres...>
              <egScreen:autoplateDGCreq>EG_DFH_B.icpro</egScreen:autoplate...>
              <egScreen:autoplateDGCLW>EG_FIQ4tolb.dgc</egScreen:autoplate...>
              <egScreen:autoplateDGCCT>EG_FIQ4tolb.dgc</egScreen:autoplate...>
              <egScreen:autopressDGCreq></egScreen:autopressDGCreq>
              <egScreen:autopressDGCLW></egScreen:autopressDGCLW>
              <egScreen:autopressDGCCT></egScreen:autopressDGCCT>
              <egScreen:gamma>0</egScreen:gamma>
              <egScreen:usedrefs>0</egScreen:usedrefs>
              <egScreen:frequencyreq>120</egScreen:frequencyreq>
              <egScreen:frequency>116.781</egScreen:frequency>
              <egScreen:anglereq>15</egScreen:anglereq>
              <egScreen:angledirection>CW</egScreen:angledirection>
              <egScreen:angle>15</egScreen:angle>
              <egScreen:dotshapereq>c</egScreen:dotshapereq>
              <egScreen:dotshape>c</egScreen:dotshape>
              <egScreen:dotname>Circular (Euclidian)</egScreen:dotname>
            </rdf:li>
            <rdf:li rdf:parseType='Resource'>
              <egScreen:singlepressDGC>midtone_m_5.dgc</egScreen:singlepres...>
              <egScreen:autoplateDGCreq>EG_DFH_B.icpro</egScreen:autoplate...>
              <egScreen:autoplateDGCLW>EG_FIQ4htolb.dgc</egScreen:autoplate...>
              <egScreen:autoplateDGCCT>EG_FIQ4htolb.dgc</egScreen:autoplate...>
              <egScreen:autopressDGCreq></egScreen:autopressDGCreq>
              <egScreen:autopressDGCLW></egScreen:autopressDGCLW>
              <egScreen:autopressDGCCT></egScreen:autopressDGCCT>
              <egScreen:gamma>0</egScreen:gamma>
              <egScreen:usedrefs>0</egScreen:usedrefs>
              <egScreen:frequencyreq>130</egScreen:frequencyreq>
              <egScreen:frequency>132.258</egScreen:frequency>
              <egScreen:anglereq>15</egScreen:anglereq>
              <egScreen:angledirection>CW</egScreen:angledirection>
              <egScreen:angle>15</egScreen:angle>
              <egScreen:dotshapereq>c</egScreen:dotshapereq>
              <egScreen:dotshape>c</egScreen:dotshape>
              <egScreen:dotname>Circular (Euclidian)</egScreen:dotname>
            </rdf:li>
          </rdf:Bag>
        </egScreenC:screens>
      </rdf:li>
      <rdf:li rdf:parseType='Resource'>
        <egScreenC:screens>
          <rdf:Bag>
            <rdf:li rdf:parseType='Resource'>
              <egScreen:singlepressDGC>midtone_m_5.dgc</egScreen:singlepres...>
              <egScreen:autoplateDGCreq>EG_DFH_B.icpro</egScreen:autoplate...>
              <egScreen:autoplateDGCLW>EG_FIQ4tolb.dgc</egScreen:autoplate...>
              <egScreen:autoplateDGCCT>EG_FIQ4tolb.dgc</egScreen:autoplate...>
              <egScreen:autopressDGCreq></egScreen:autopressDGCreq>
              <egScreen:autopressDGCLW></egScreen:autopressDGCLW>
              <egScreen:autopressDGCCT></egScreen:autopressDGCCT>
            </rdf:li>
          </rdf:Bag>
        </egScreenC:screens>
      </rdf:li>
    </rdf:Seq>
  </egScreenC:screenContainer>
</rdf:Description>
```

```
<egScreen:gamma>0</egScreen:gamma>
<egScreen:usedrefs>0</egScreen:usedrefs>
<egScreen:frequencyreq>120</egScreen:frequencyreq>
<egScreen:frequency>116.781</egScreen:frequency>
<egScreen:anglereq>15</egScreen:anglereq>
<egScreen:angledirection>CW</egScreen:angledirection>
<egScreen:angle>15</egScreen:angle>
<egScreen:dotshapereq>c</egScreen:dotshapereq>
<egScreen:dotshape>c</egScreen:dotshape>
<egScreen:dotname>Circular (Euclidian)</egScreen:dotname>
  </rdf:li>
</rdf:Bag>
</egScreenC:screens>
</rdf:li>
</rdf:Seq>
</egScreenC:screenContainer>
</rdf:Description> </rdf:li>
```

DGC Curves

This section is optional.

XMP Esko DGC Curves Schema

Schema namespace <http://ns.esko-graphics.com/dgclist/1.0/>

Schema namespace prefix egDGCL

Property	ValueType	Description
egDGCL:dgcs	bag egDGC:DGCC	The collection of DGC curves.

DGCC

Schema namespace <http://ns.esko-graphics.com/dgc/1.0/>

Schema namespace prefix egDGC

Property	ValueType	Description
egDGC:name	string	The name of the DGC curve. The name of the DGC curve is used to refer to this curve from the screen section (see egScreen:totalDGCLW and egScreen:totalDGCCT). The name has to be unique within the context of the XMP document.
egDGC:values	list of double	An ordered list with an even number of double values with values between 0.0 and 1.0. Value $2n$ = x value of point n. Value $2n+1$ = y value of point n The list has to be ordered with increasing values for x covering the entire domain from $p_0=(0.0, y_0)$ to $p_N=(1.0,y_N)$

Used References

In this element the list of references to the Esko Graphics Documents used to generate this digital film set is stored. Only digital film sets that are the result of a merge of several graphics documents will have more than one entry in this list.

Schema namespace <http://ns.esko-graphics.com/usedfileslist/1.0/>
Schema namespace prefix `egUsedFL`

Property	ValueType	Description
<code>egUsedFL:files</code>	<i>seq</i> <code>egUsedF:UsedRef</code>	A sequence of references to externally referenced graphics documents.

UsedRef

Schema namespace <http://ns.esko-graphics.com/usedfile/1.0/>
Schema namespace prefix `egUsedF`

Property	ValueType	Description
<code>egUsedF:instanceID</code>	URI	The referenced document's identification. We use an absolute URL.
<code>egUsedF:renditionClass</code>	RenditionClass	The MIME type of the file referenced by this link.
<code>egUsedF:pagenr</code>	integer	The page number of the reference document used.

Note: The following MIME types are used.

`application/grs` Brix formats
`application/sta`
`application/imp`
`application/pdf`
`application/pdfsta`
`application/pdfpla`

`application/postscript`
`application/pdf`

Example :

```
<rdf:Description rdf:about=''
  xmlns:egUsedF='http://ns.esko-graphics.com/usedfile/1.0/'
  xmlns:egUsedFL='http://ns.esko-graphics.com/usedfileslist/1.0/'>
  <egUsedFL:files>
    <rdf:Seq>
      <rdf:li rdf:parseType='Resource'>
        <egUsedF:instanceID>file://mystique/Marriage/CardForMarriage.grs</...>
        <egUsedF:renditionClass>application/grs</egUsedF:renditionClass>
      </rdf:li>
      <rdf:li rdf:parseType='Resource'>
        <egUsedF:instanceID>file://mystique/Eskookies_Box/CookieBox.grs</...>
        <egUsedF:renditionClass>application/grs</egUsedF:renditionClass>
      </rdf:li>
    </rdf:Seq>
  </egUsedFL:files>
</rdf:Description>
```

Pages

In this element page information is stored.

Schema namespace <http://ns.esko-graphics.com/pagrange/1.0/>
Schema namespace prefix egPagL

Property	ValueType	Description
egPagL:pagelist	seq egPag:PageRange	A sequence of page ranges

PageRange

Schema namespace <http://ns.esko-graphics.com/pagerange/1.0/>
Schema namespace prefix egPag

Property	ValueType	Description
egPag:start	integer	Start page (physical page number, 0 based)
egPag:end	integer	End page (physical page number, 0 based)
egPag:inks	seq integer	The list of ink numbers of this page, referring to the position in the Inks list (see <i>Graphics</i> section)

Example :

```
<rdf:Description rdf:about=''
  xmlns:egPag='http://ns.esko-graphics.com/pagerange/1.1/'
  xmlns:egPagL='http://ns.esko-graphics.com/pagrange/1.0/'>
  <egPagL:pagelist>
    <rdf:Seq>
      <rdf:li rdf:parseType='Resource'>
        <egPag:start>0</egPag:start>
        <egPag:end>10</egPag:end>
        <egPag:inks>
          <rdf:Seq>
            <rdf:li>0</rdf:li>
          </rdf:Seq>
        </egPag:inks>
      </rdf:li>
      <rdf:li rdf:parseType='Resource'>
        <egPag:start>11</egPag:start>
        <egPag:end>12</egPag:end>
        <egPag:inks>
          <rdf:Seq>
            <rdf:li>1</rdf:li>
          </rdf:Seq>
        </egPag:inks>
      </rdf:li>
    </rdf:Seq>
  </egPagL:pagelist>
</rdf:Description>
```

Imposition

This element is present for PDF production files that represent a fully imposed PDF. The XMP element describes the plates corresponding with this fully imposed PDF.

Note that the partitioning follows the same hierarchy as JDF:

signature ->sheet->side->separation->version

Schema namespace <http://ns.esko-graphics.com/impose/1.0/>

Schema namespace prefix egImp

Property	ValueType	Description
egImp:surfaces	seq egSurf:Surface	An ordered list of surfaces. Each entry in the ordered list describes the surface that is represented by the corresponding page in the multi-page production PDF.

Surface

Schema namespace <http://ns.esko-graphics.com/surface/1.0/>

Schema namespace prefix egSurf

Property	ValueType	Description
egSurf:sheetOrgX	double	The x position of the origin of the sheet (see coordinate systems below)
egSurf:sheetOrgY	double	The y position of the origin of the sheet (see coordinate systems below)
egSurf:sheetSizeX	double	The width of the sheet (see coordinate systems below)
egSurf:sheetSizeY	double	The height of the sheet (see coordinate systems below)
egSurf:plateOrgX	double	The x position of the origin of the plate (see coordinate systems below)
egSurf:plateOrgY	double	The y position of the origin of the plate (see coordinate systems below)
egSurf:plateSizeX	double	The width of the plate (see coordinate systems below)
egSurf:plateSizeY	double	The height of the plate (see coordinate systems below)
egSurf:signature	string	The name of the signature to which this surface belongs.
egSurf:sheet	string	The name of the sheet in the signature to which this surface belongs.

egSurf:side	string	The side of sheet in the signature this surface represents. Possible values: “front” “back”
egSurf:plates	seq egPlate:Plate	The plates of that surface

Plate

Schema namespace

<http://ns.esko-graphics.com/plate/1.0/>

Schema namespace prefix

egPlate

Property	ValueType	Description
egPlate:inkname	string	The ink name of the plate. E.g. “black”
egPlate:inkbook	string	The ink book name of the plate. E.g. “process”
egPlate:versions	bag string	The versions for which this plate will be used. E.g. “French,German”.
egPlate:plateid	string	The id of the plate as known in the MIS system
egPlate:ftplateid	string	The FastTrack GUID of this plate

☞ Definition of coordinate systems

The fully imposed file has a Cartesian coordinate system with origin top left of the trim box (borders).

The sheet and plate have a Cartesian coordinate system with the origin top left.