pdf standards

basic setup

Given the range of possibilities to decorate a pdf document it is no surprise that there has been attempts to standardize, especially when it comes to printing. Reasons are:

- Printing is normally done in the cmyk color space, which is sensitive for the kind of ink and paper used. You might want to be sure that the right colors come out.

- Not all rasterization software is capable of supporting features like transparency, so those either have to be avoided or flattened.

- When pdf came around printing technology and related software and workflows had to be adapted and that took a while. You don't replace six or more figures worth equipment just because some new printing format shows up.

- Because pdf is also meant for storing (e.g.) states and features of editing software as well as for previewing on screen, some features might interfere (or confuse) printing workflows.

- Some (interactive) features were introduced without proper software support and therefore evolved and/or were dropped. And who knows what bugs in software became features or limitations. This made the format unreliable in places and as a consequence constraints made sense.

You can imagine some more arguments for permitting only a subset of features in a pdf document and indeed that is what these (retrospective) standards do. Add to that the fact that there is validating and cleanup software in use and the picture for users become blurry, especially because:

- The various pdf standards are non free and don't come cheap so for free software development some guesswork is needed.

- Interpreting standards demands some knowledge of the pdf internals. There are very advanced features in pdf that are not permitted in standards while relative trivial ones are forbidden. This can be confusing.

- Supporting standards interferes with the fact that software had to adapt to for instance viewers that themselves had to interpret the more vague format. Therefore support for standards is also a matter of adding and dropping features, combined with testing viewing software that differs in interpretation of the evolving specification.

The good news is that users can live without bothering. Nobody can force you to enable a specific standard, certainly not for your own documents. And when you want them printed, if what comes out looks fine to you, so be it. The average user will not notice

a bit different colors; a consistent makeup and interesting content is more important. However, when you're forced to obey a standard, the solution is not hard:

```
\setupbackend
  [format=pdf/a4]
```

The complete list of standards that are supported is given at the end. Not all parameters in a definition are used (any longer) but we keep them as indicators of what is involved. Of course these definitions and variable names are ConTEXt specific. The standards are defined in the `type-fmt-imp-*.lmt` files (before they were in a single file).

When setting up the backend, the only keys that really matter here are `intent` and `profile`. The first parameter controls the output medium, the second the color profiles that are included. Of course you can wonder if that all makes sense: let the printing company take care of that.

In principle you can have three color spaces us use (more if you also consider spot colors and combined color spaces (n). So in the next mix we need to make sure that, if we use for instance an rgb target (intent) we also communicate how cmyk maps to that. Below all values are .75.

When `intent` is set to `default`, `rgb` or `cmyk` and the `profile` value is unset, the following is assumed. If you want something different you can set up these profiles yourself. The default setting might evolve over time. Setting the `intent` parameter to nothing prevents inclusion, which is normally fine, unless you are bothered by a validation tool complaining loudly.

```
default   profile={sRGB-v4.icc,sGrey-v4.icc,CGATS001Compat-v2-micro.icc}
          intent=sRGB-v4.icc
rgb       profile={sRGB-v4.icc,sGrey-v4.icc,CGATS001Compat-v2-micro.icc}
          intent=sRGB-v4.icc
cmyk      profile={sRGB-v4.icc,sGrey-v4.icc}
          intent=CGATS001Compat-v2-micro.icc
```

The file `colorprofiles.xml` is used to get some properties of profiles if needed. The ones used above come from https://github.com/saucecontrol/Compact-ICC-Profiles

and are as small as possible: "better something small that nothing at all" has been the motto here.

If you're somehow forced to support tagging, we suggest that you read the `tagging.pdf` manual on that. In that case the standards are `PDF/UA-1` and `PDF/UA-2` where the later sort of assumes `PDF/A-4` as baseline.

a1a2005

acrobat	true	**internal**	true
attachments	false	**jbig2**	true
calibrated	true	**jpeg2000**	true
charsets	true	**layers**	true
cidsets	true	**metadata**	\<table\>
cielab	true	**nchannel**	true
cmyk	true	**prepress**	true
compression	false	**procsets**	true
external	true	**rgb**	true
format	PDF/A-1a:2005	**spot**	true
forms	true	**tagging**	true
gray	true	**transparency**	true
info	true	**version**	1.4
intent	GTS_PDFA1	**xmpfile**	lpdf-pda.xml
intents	true		

a1b2005

acrobat	true	**internal**	true
attachments	false	**jbig2**	true
calibrated	true	**jpeg2000**	true
charsets	true	**layers**	true
cidsets	true	**metadata**	\<table\>
cielab	true	**nchannel**	true
cmyk	true	**prepress**	true
compression	false	**procsets**	true
external	true	**rgb**	true
format	PDF/A-1b:2005	**spot**	true
forms	true	**tagging**	false
gray	true	**transparency**	true
info	true	**version**	1.4
intent	GTS_PDFA1	**xmpfile**	lpdf-pda.xml
intents	true		

a2a

acrobat	true	**internal**	true
attachments	true	**jbig2**	true
calibrated	true	**jpeg2000**	true
charsets	true	**layers**	true
cidsets	false	**metadata**	\<table\>
cielab	true	**nchannel**	true
cmyk	true	**prepress**	true
compression	true	**procsets**	false
external	true	**rgb**	true
format	PDF/A-2a	**spot**	true
forms	true	**tagging**	true
gray	true	**transparency**	true
info	true	**version**	1.7
intent	GTS_PDFA1	**xmpfile**	lpdf-pda.xml
intents	true		

a2b

acrobat	true	**internal**	true
attachments	true	**jbig2**	true
calibrated	true	**jpeg2000**	true
charsets	true	**layers**	true
cidsets	false	**metadata**	\<table\>
cielab	true	**nchannel**	true
cmyk	true	**prepress**	true
compression	true	**procsets**	false
external	true	**rgb**	true
format	PDF/A-2b	**spot**	true
forms	true	**tagging**	false
gray	true	**transparency**	true
info	true	**version**	1.7
intent	GTS_PDFA1	**xmpfile**	lpdf-pda.xml
intents	true		

a2u

acrobat	true	**internal**	true
attachments	true	**jbig2**	true
calibrated	true	**jpeg2000**	true
charsets	true	**layers**	true
cidsets	false	**metadata**	<table>
cielab	true	**nchannel**	true
cmyk	true	**prepress**	true
compression	true	**procsets**	false
external	true	**rgb**	true
format	PDF/A-2u	**spot**	true
forms	true	**tagging**	false
gray	true	**transparency**	true
info	true	**version**	1.7
intent	GTS_PDFA1	**xmpfile**	lpdf-pda.xml
intents	true		

a3a

acrobat	true	**internal**	true
attachments	true	**jbig2**	true
calibrated	true	**jpeg2000**	true
charsets	true	**layers**	true
cidsets	false	**metadata**	<table>
cielab	true	**nchannel**	true
cmyk	true	**prepress**	true
compression	true	**procsets**	false
external	true	**rgb**	true
format	PDF/A-3a	**spot**	true
forms	true	**tagging**	true
gray	true	**transparency**	true
info	true	**version**	1.7
intent	GTS_PDFA1	**xmpfile**	lpdf-pda.xml
intents	true		

a3b

acrobat	true	**internal**	true
attachments	true	**jbig2**	true
calibrated	true	**jpeg2000**	true
charsets	true	**layers**	true
cidsets	false	**metadata**	\<table\>
cielab	true	**nchannel**	true
cmyk	true	**prepress**	true
compression	true	**procsets**	false
external	true	**rgb**	true
format	PDF/A-3b	**spot**	true
forms	true	**tagging**	false
gray	true	**transparency**	true
info	true	**version**	1.7
intent	GTS_PDFA1	**xmpfile**	lpdf-pda.xml
intents	true		

a3u

acrobat	true	**internal**	true
attachments	true	**jbig2**	true
calibrated	true	**jpeg2000**	true
charsets	true	**layers**	true
cidsets	false	**metadata**	\<table\>
cielab	true	**nchannel**	true
cmyk	true	**prepress**	true
compression	true	**procsets**	false
external	true	**rgb**	true
format	PDF/A-3u	**spot**	true
forms	true	**tagging**	false
gray	true	**transparency**	true
info	true	**version**	1.7
intent	GTS_PDFA1	**xmpfile**	lpdf-pda.xml
intents	true		

a4

acrobat	false	**internal**	true
attachments	true	**jbig2**	true
calibrated	true	**jpeg2000**	true
charsets	true	**layers**	true
cidsets	false	**metadata**	\<table\>
cielab	true	**nchannel**	true
cmyk	true	**prepress**	true
compression	true	**procsets**	false
external	true	**rgb**	true
format	PDF/A-4	**spot**	true
forms	true	**tagging**	false
gray	true	**transparency**	true
info	false	**version**	2.0
intent	GTS_PDFA1	**xmpfile**	lpdf-pua.xml
intents	true		

a4e

acrobat	false	**internal**	true
attachments	true	**jbig2**	true
calibrated	true	**jpeg2000**	true
charsets	true	**layers**	true
cidsets	false	**metadata**	\<table\>
cielab	true	**nchannel**	true
cmyk	true	**prepress**	true
compression	true	**procsets**	false
external	true	**rgb**	true
format	PDF/A-4	**spot**	true
forms	true	**tagging**	false
gray	true	**transparency**	true
info	false	**version**	2.0
intent	GTS_PDFA1	**xmpfile**	lpdf-pua.xml
intents	true		

a4f

acrobat	false	**internal**	true
attachments	true	**jbig2**	true
calibrated	true	**jpeg2000**	true
charsets	true	**layers**	true
cidsets	false	**metadata**	\<table\>
cielab	true	**nchannel**	true
cmyk	true	**prepress**	true
compression	true	**procsets**	false
external	true	**rgb**	true
format	PDF/A-4	**spot**	true
forms	true	**tagging**	false
gray	true	**transparency**	true
info	false	**version**	2.0
intent	GTS_PDFA1	**xmpfile**	lpdf-pua.xml
intents	true		

ua1

acrobat	true	**internal**	true
attachments	true	**jbig2**	true
calibrated	true	**jpeg2000**	true
charsets	true	**layers**	true
cidsets	false	**metadata**	\<table\>
cielab	true	**nchannel**	true
cmyk	true	**prepress**	true
compression	true	**procsets**	false
external	true	**rgb**	true
format	PDF/UA-1	**spot**	true
forms	true	**tagging**	true
gray	true	**transparency**	true
info	true	**version**	1.7
intent	GTS_PDFA1	**xmpfile**	lpdf-pua.xml
intents	true		

ua2

acrobat	false		**internal**	true
attachments	true		**jbig2**	true
calibrated	true		**jpeg2000**	true
charsets	true		**layers**	true
cidsets	false		**metadata**	\<table\>
cielab	true		**nchannel**	true
cmyk	true		**prepress**	true
compression	true		**procsets**	false
external	true		**rgb**	true
format	PDF/UA-2		**spot**	true
forms	true		**tagging**	true
gray	true		**transparency**	true
info	false		**version**	2.0
intent	GTS_PDFA1		**xmpfile**	lpdf-pua.xml
intents	true			

x1a2001

acrobat	true		**internal**	true
attachments	false		**jbig2**	true
calibrated	true		**jpeg2000**	true
charsets	true		**layers**	true
cidsets	true		**metadata**	\<table\>
cielab	true		**nchannel**	true
cmyk	true		**prepress**	true
compression	false		**procsets**	true
external	true		**rgb**	true
format	PDF/X-1a:2001		**spot**	true
forms	false		**tagging**	false
gray	true		**transparency**	true
info	true		**version**	1.3
intent	GTS_PDFX		**xmpfile**	lpdf-pdx.xml
intents	true			

x1a2003

acrobat	true	**internal**	true
attachments	false	**jbig2**	true
calibrated	true	**jpeg2000**	true
charsets	true	**layers**	true
cidsets	true	**metadata**	<table>
cielab	true	**nchannel**	true
cmyk	true	**prepress**	true
compression	false	**procsets**	true
external	true	**rgb**	true
format	PDF/X-1a:2003	**spot**	true
forms	false	**tagging**	false
gray	true	**transparency**	true
info	true	**version**	1.4
intent	GTS_PDFX	**xmpfile**	lpdf-pdx.xml
intents	true		

x32002

acrobat	true	**internal**	true
attachments	false	**jbig2**	true
calibrated	true	**jpeg2000**	true
charsets	true	**layers**	true
cidsets	true	**metadata**	<table>
cielab	true	**nchannel**	true
cmyk	true	**prepress**	true
compression	false	**procsets**	true
external	true	**rgb**	true
format	PDF/X-3:2002	**spot**	true
forms	false	**tagging**	false
gray	true	**transparency**	true
info	true	**version**	1.3
intent	GTS_PDFX	**xmpfile**	lpdf-pdx.xml
intents	true		

x32003

acrobat	true	**internal**	true
attachments	false	**jbig2**	true
calibrated	true	**jpeg2000**	true
charsets	true	**layers**	true
cidsets	true	**metadata**	<table>
cielab	true	**nchannel**	true
cmyk	true	**prepress**	true
compression	false	**procsets**	true
external	true	**rgb**	true
format	PDF/X-3:2003	**spot**	true
forms	false	**tagging**	false
gray	true	**transparency**	true
info	true	**version**	1.4
intent	GTS_PDFX	**xmpfile**	lpdf-pdx.xml
intents	true		

x4

acrobat	true	**internal**	true
attachments	false	**jbig2**	true
calibrated	true	**jpeg2000**	true
charsets	true	**layers**	true
cidsets	true	**metadata**	<table>
cielab	true	**nchannel**	true
cmyk	true	**prepress**	true
compression	true	**procsets**	true
external	true	**rgb**	true
format	PDF/X-4p	**spot**	true
forms	false	**tagging**	false
gray	true	**transparency**	true
info	true	**version**	1.6
intent	GTS_PDFX	**xmpfile**	lpdf-pdx.xml
intents	true		

x4p

acrobat	true	**internal**	true
attachments	false	**jbig2**	true
calibrated	true	**jpeg2000**	true
charsets	true	**layers**	true
cidsets	true	**metadata**	\<table\>
cielab	true	**nchannel**	true
cmyk	true	**prepress**	true
compression	true	**procsets**	true
external	true	**rgb**	true
format	PDF/X-4p	**spot**	true
forms	false	**tagging**	false
gray	true	**transparency**	true
info	true	**version**	1.6
intent	GTS_PDFX	**xmpfile**	lpdf-pdx.xml
intents	true		

x5g

acrobat	true	**internal**	true
attachments	false	**jbig2**	true
calibrated	true	**jpeg2000**	true
charsets	true	**layers**	true
cidsets	true	**metadata**	\<table\>
cielab	true	**nchannel**	true
cmyk	true	**prepress**	true
compression	true	**procsets**	true
external	true	**rgb**	true
format	PDF/X-5g	**spot**	true
forms	false	**tagging**	false
gray	true	**transparency**	true
info	true	**version**	1.6
intent	GTS_PDFX	**xmpfile**	lpdf-pdx.xml
intents	true		

x5n

acrobat	true	**internal**	true
attachments	false	**jbig2**	true
calibrated	true	**jpeg2000**	true
charsets	true	**layers**	true
cidsets	true	**metadata**	<table>
cielab	true	**nchannel**	true
cmyk	true	**prepress**	true
compression	true	**procsets**	true
external	true	**rgb**	true
format	PDF/X-5n	**spot**	true
forms	false	**tagging**	false
gray	true	**transparency**	true
info	true	**version**	1.6
intent	GTS_PDFX	**xmpfile**	lpdf-pdx.xml
intents	true		

x5pg

acrobat	true	**internal**	true
attachments	false	**jbig2**	true
calibrated	true	**jpeg2000**	true
charsets	true	**layers**	true
cidsets	true	**metadata**	<table>
cielab	true	**nchannel**	true
cmyk	true	**prepress**	true
compression	true	**procsets**	true
external	true	**rgb**	true
format	PDF/X-5pg	**spot**	true
forms	false	**tagging**	false
gray	true	**transparency**	true
info	true	**version**	1.6
intent	GTS_PDFX	**xmpfile**	lpdf-pdx.xml
intents	true		

tag	acrobat	attachments	calibrated	charsets	cidsets	cielab	cmyk	compression	external	format	forms	gray	info	intent	intents	internal	jbig2	jpeg2000	layers	metadata	nchannel	prepress	procsets	rgb	spot	tagging	transparency	version	xmpfile
a1a2005	true	false	true	true	true	true	true	false	true	PDF/A-1a:2005	true	true	true	GTS_PDFA1	true	true	true	true	true	<table>	true	true	true	true	true	true	true	1.4	lpdf-pda.xml
a1b2005	true	false	true	true	true	true	true	false	true	PDF/A-1b:2005	true	true	true	GTS_PDFA1	true	true	true	true	true	<table>	true	true	true	true	true	false	true	1.4	lpdf-pda.xml
a2a	true	true	true	true	false	true	true	true	true	PDF/A-2a	true	true	true	GTS_PDFA1	true	true	true	true	true	<table>	true	false	true	true	true	true	1.7	lpdf-pda.xml
a2b	true	true	true	true	false	true	true	true	true	PDF/A-2b	true	true	true	GTS_PDFA1	true	true	true	true	true	<table>	true	false	true	true	false	true	1.7	lpdf-pda.xml
a2u	true	true	true	true	false	true	true	true	true	PDF/A-2u	true	true	true	GTS_PDFA1	true	true	true	true	true	<table>	true	false	true	true	false	true	1.7	lpdf-pda.xml
a3a	true	true	true	true	false	true	true	true	true	PDF/A-3a	true	true	true	GTS_PDFA1	true	true	true	true	true	<table>	true	false	true	true	true	true	1.7	lpdf-pda.xml
a3b	true	true	true	true	false	true	true	true	true	PDF/A-3b	true	true	true	GTS_PDFA1	true	true	true	true	true	<table>	true	false	true	false	true	true	1.7	lpdf-pda.xml
a3u	true	true	true	true	false	true	true	true	true	PDF/A-3u	true	true	true	GTS_PDFA1	true	true	true	true	true	<table>	true	false	true	true	true	true	1.7	lpdf-pda.xml
a4	false	true	true	true	false	true	true	true	true	PDF/A-4	true	true	false	GTS_PDFA1	true	true	true	true	true	<table>	true	false	true	false	true	true	2.0	lpdf-pua.xml
a4e	false	true	true	true	false	true	true	true	true	PDF/A-4	true	true	false	GTS_PDFA1	true	true	true	true	true	<table>	true	false	true	false	true	true	2.0	lpdf-pua.xml
a4f	false	true	true	true	false	true	true	true	true	PDF/A-4	true	true	false	GTS_PDFA1	true	true	true	true	true	<table>	true	false	true	false	true	true	2.0	lpdf-pua.xml
ua1	true	true	true	true	false	true	true	true	true	PDF/UA-1	true	true	false	GTS_PDFA1	true	true	true	true	true	<table>	true	false	true	true	true	true	1.7	lpdf-pua.xml
ua2	true	true	true	true	false	true	true	true	true	PDF/UA-2	true	true	false	GTS_PDFA1	true	true	true	true	true	<table>	true	false	true	true	true	true	2.0	lpdf-pua.xml
x1a2001	true	false	true	true	true	true	true	false	true	PDF/X-1a:2001	false	true	true	GTS_PDFX	true	true	true	true	true	<table>	true	true	true	false	true	true	1.3	lpdf-pdx.xml
x1a2003	true	false	true	true	true	true	true	false	true	PDF/X-1a:2003	false	true	true	GTS_PDFX	true	true	true	true	true	<table>	true	true	true	false	true	true	1.4	lpdf-pdx.xml
x32002	true	false	true	true	true	true	true	false	true	PDF/X-3:2002	false	true	true	GTS_PDFX	true	true	true	true	true	<table>	true	true	true	false	true	true	1.3	lpdf-pdx.xml
x32003	true	false	true	true	true	true	true	false	true	PDF/X-3:2003	false	true	true	GTS_PDFX	true	true	true	true	true	<table>	true	true	true	false	true	true	1.4	lpdf-pdx.xml
x4	true	false	true	true	true	true	true	true	true	PDF/X-4p	false	true	true	GTS_PDFX	true	true	true	true	true	<table>	true	true	true	false	true	true	1.6	lpdf-pdx.xml
x4p	true	false	true	true	true	true	true	true	true	PDF/X-4p	false	true	true	GTS_PDFX	true	true	true	true	true	<table>	true	true	true	false	true	true	1.6	lpdf-pdx.xml
x5g	true	false	true	true	true	true	true	true	true	PDF/X-5g	false	true	true	GTS_PDFX	true	true	true	true	true	<table>	true	true	true	false	true	true	1.6	lpdf-pdx.xml
x5n	true	false	true	true	true	true	true	true	true	PDF/X-5n	false	true	true	GTS_PDFX	true	true	true	true	true	<table>	true	true	true	false	true	true	1.6	lpdf-pdx.xml
x5pg	true	false	true	true	true	true	true	true	true	PDF/X-5pg	false	true	true	GTS_PDFX	true	true	true	true	true	<table>	true	true	true	true	true	false	1.6	lpdf-pdx.xml

Not all parameters are used and some are kept for historic reasons. The red and green values are not set and fall back to defaults.