

The `documentmetadata-support` code*

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1 Introduction

The kernel command `\DocumentMetadata`, which can be used as the very first declaration in a document (i.e., before `\documentclass`), defines metadata and other configuration data that applies to the document as a whole (using a key/value syntax).

While the underlying functionality is still under development (e.g., further keys will be added over time and keys marked temporary may vanish again) the code for `\DocumentMetadata` is placed in a separate bundle, so that it is easier to update it without the need to build a full L^AT_EX release. Over time the functionality will move fully into the kernel.

`\DocumentMetadata` also loads and activates the new PDF management code from `pdfmanagement-testphase`. As this forces the loading of the `l3backend` files, a backend that can't be detected automatically like `dvipdfmx`, must be set in the first `\DocumentMetadata`.

From a process perspective `\DocumentMetadata` loads the `pdfmanagement-testphase` code the first time it is called and then redefines itself to only manage key/value pairs in case it is called more than once. In particular, this means that a document without a `\DocumentMetadata` declaration has no code available for extended management of PDF output as needed for various features developed as part of the multi-year “Tagged PDF” project [1].

2 Currently supported key/values

Currently the following keys are implemented for `\DocumentMetadata`:

backend Passes the backend name to `expl3`. This is needed only if the needed backend can't be automatically determined or if the workflow used requires a special backend.

pdfversion Sets the PDF version explicitly, e.g., `pdfversion=1.7`

uncompress (no value) Forces an uncompressed pdf — mainly for debugging purposes.

lang Explicitly sets the Lang entry in the Catalog, e.g., `lang=de-DE`. If not given the default value used is `en-US`.

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pdfstandard Choice key to set the pdf standard. Currently A-1b, A-2a, A-2b, A-2u, A-3a, A-3b, A-3u and A-4 are accepted as values. The casing is irrelevant, a-1b works too. Note that using these key doesn't mean that the document actually follows the standard. L^AT_EX can neither ensure nor check all requirements of a standard, and not everything it can do theoretically has already been implemented. When setting an A-standard a color profile is included and the `/OutputIntent` is set and javascript action in hyperref are suppressed. The u variants do not enforce unicode, but they will pass the information to hyperref. The a variants do *not* enforce (or even test) a tagged pdf yet.

Starting with version 0.95s of pdfmanagement-testphase it is also possible to use the values X-4, X-4p, X-5g, X-5n, X-5pg, X-6, X-6n, X-6p, UA-1 for a PDF/X and PDF/UA standard. These keys currently set *only* the relevant XMP-metadata. In version 0.95z support for UA-2 has been added but note that UA-2 hasn't been released yet. It should be used only together with pdf version 2.0.

pdfstandard can be used more than once to set overlapping standards, e.g:
pdfstandard=A-2b,pdfstandard=X-4,pdfstandard=UA-1

If XMP-metadata are added (see the following key xmp) the needed conformance marker for the standards are set.

More information can be found in the documentation of l3pdfmeta.

xmp A boolean, if set to false no XMP metadata are added to the PDF. The initial value is true. Details are described in the documentation of l3pdfmeta.

colorprofiles This allows to load icc-colorprofiles. Details are described in the documentation of l3pdfmeta.

testphase This key is used to load testphase code. The testphase key can only be used in the first `\DocumentMetadata`. The values it accepts and their effect will change over time, when testphase packages are added or removed or when the code is moved into the kernel. The key accepts a list of values and it can be used more than once.

The **phase** key bundle testphase modules. They also all activate tagging.

phase-I This value loads code implementing the first phase of the project [1], i.e., it will load the tagpdf package. It will also activate tagging by issuing `\tagpdfsetup{activate,interwordspace}`. This phase is frozen.

phase-II It differs from phase-I only in one point: It will additionally activate tagging of paragraphs with `\tagpdfsetup{paratagging}`. In the upcoming months it will also enable automatic tagging of other basic document elements.

phase-III This is the current development phase. It differs from phase-II *a lot*: It will load new code for the tagging of lists, sectioning commands, table of contents and similar lists, graphics, minipages and floats. As it redefines many internals it is currently restricted to the use of standard classes (article, report, and book) and it supports only a limited number of add-on packages.

The various testphase modules can also be loaded individually (and least in theory, there can be hidden dependencies). If loaded like this, the tagpdf package is not loaded and tagging is not activated! The list of modules will change over time.

- new-or-1** This patches a few commands related to the output routine. The patches are needed for the tagging of paragraphs, for the tagging of header and footer and to allow the PDF management to insert code which avoids that links happening at page breaks spills into the header and footer. This code is automatically loaded if the `testphase` values `phase-I`, `phase-II` or `new-or` are used.
- new-or** This loads more changes to the output routine required for the tagging. It is not compatible with every class! The code is also loaded by the `phase-II` value.
- sec** This adapts commands related to sectioning to make them tagging aware. The `sec` module is loaded by `phase-III`.
- toc** This adapts commands related to the table of contents and similar list to make them tagging aware. The `toc` module is loaded by `phase-III`.
- graphic** This enables tagging support for the `\includegraphics` command and the `picture` environment. This code is also loaded by the `phase-III` key.
- block** This reimplements lists and blocks environments and add tagging support. This code is also loaded by the `phase-III` key.
- minipage** This adds tagging support to `minipage` and `\parbox`. This code is also loaded by the `phase-III` key.
- float** This adds tagging support to floats. This code is also loaded by the `phase-III` key.
- bib** This adds tagging support to citations and bibliographies. This code is also loaded by the `phase-III` key.
- text** This module adds tagging support to the `LATEX` logo and to the `\emph` command. This code is also loaded by the `phase-III` key.
- math** This adapts math for tagging. This is only a prototype. The module is currently not loaded by any `phase` key.
- firstaid** This contains small adjustments to external packages. The module is currently not loaded by any `phase` key.
- debug** This key activates some debug options. It takes a list of key-values as value. Currently the following keys are known:
- para** with the default and only value `show`. It will activate the `paratagging-show` option of `tagpdf`,
- log** with the values as described in the documentation `tagpdf`,
- uncompress** which does the same as `uncompress` as main key
- pdfmanagement** a boolean which allows to deactivate the pdfmanagement.
- firstaidoff** This accepts a comma lists of keywords and disables the patches related to them. More information can be found in the documentation of `pdfmanagement-firstaid`.
- xmp-export** This will export the XMP-metadata to a file `\jobname.xmpi`. with `debug={xmp-export=filename}` the file name can be changed. More information can be found in the documentation of `l3pdfmeta` of the `pdfmanagement-testphase` bundle.

tagpdf This loads the package tagpdf-debug which enhances various commands from tagpdf with additional debugging options. This can slow down the compilation!

References

- [1] Frank Mittelbach and Chris Rowley: *L^AT_EX Tagged PDF — A blueprint for a large project*. <https://latex-project.org/publications/indexbyyear/2020/>

3 The Implementation

```

1 <@@=pdfmanagement>
2 <*code>
3
4 \RequirePackage{pdfmanagement-testphase}
5 \ExplSyntaxOn\makeatletter
\DocumentMetadata \DocumentMetadata should not be used after \documentclass so we error in this case.
It can be used more than once but follow-up calls should not do the initialization code.
6 \cs_set_protected:Npn \DocumentMetadata #1
7 {
8   \cs_if_eq:NNTF \documentclass \@twoclasseserror
9     { \msg_error:nn { meta } { after-class } }
10  {

```

The wanted backend must be detected first, we read the init key and then force the loading of the backend. The backend can contain management commands, so the boolean should be set to true first.

```

11   \bool_gset_true:N \g__pdfmanagement_active_bool
12   \keys_set_groups:nnn { document / metadata } {init}{ #1 }
13   %if no backend has been loaded force it now:
14   \str_if_exist:NF \c_sys_backend_str
15   {
16     \sys_load_backend:n {}
17   }

```

Now we load the extra backend code:

```

18   \ExplSyntaxOn\makeatletter
19   \file_input:n {l3backend-testphase-\c_sys_backend_str.def}
20   \ExplSyntaxOff\makeatother

```

Set the default language (this requires that the backend has been loaded), process the rest of the keys, and setup the generic driver.

```

21   \keys_set_filter:nnn { document / metadata } { init } { lang=en-US, #1 }
22   \bool_if:NT \g__pdfmanagement_active_bool
23   {
24     \PassOptionsToPackage{customdriver=hgeneric-testphase}{hyperref}
25   }

```

`\pdfmanagement_add:nnn` has collected values in this hook.

```

26   \hook_use_once:n {pdfmanagement/add}

```

Now we redefine `\DocumentMetadata` so that it only process the keys on any further calls.
 We need to update the `hyperref` option if the active status changes.

```

27     \cs_set_protected:Npn \DocumentMetadata ##1
28     {
29         \keys_set_filter:nnn { document / metadata } { init } { ##1 }
30         \str_remove_all:cn {opt@hyperref.sty}{customdriver=hgeneric-testphase}
31         \bool_if:NT \g_pdfmanagement_active_bool
32         {
33             \PassOptionsToPackage{customdriver=hgeneric-testphase}{hyperref}
34         }
35     }

```

Load more modules, the `testphase` code and the `firstaid` code. The code is only loaded in the first `\DocumentMetadata` call!

```

36     \g_pdfmanagement_testphase_tl
37     \RequirePackage{pdfmanagement-firstaid}
38 }
39 }

```

(End of definition for `\DocumentMetadata`. This function is documented on page ??.)

```

40 %FMI defined elsewhere
41 %FMI
42 %FMI \clist_new:N \g_pdfmanagement_firstaidoff_clist
43 %FMI \tl_new:N \g_pdfmanagement_testphase_tl
44 % UFi should the definition move to here?
45 \keys_define:nn { document / metadata }
46 {
47     backend .choices:nn =
48     { dvipdfmx , dvips , dvisvgm , luatex , pdftex , pdfmode , xdvipdfmx , xetex }
49     {
50         \sys_load_backend:n {#1}
51     },
52     backend .groups:n = { init } ,
53 }
54
55 \keys_define:nn { document / metadata }
56 {
57     ,pdfversion .code:n =
58     {
59         \pdf_version_gset:n { #1 }
60         \AddToDocumentProperties [document]{pdfversion}{#1}
61     }
62     ,uncompress .code:n =
63     {
64         \pdf_uncompress:
65     }
66     ,uncompress .value_forbidden:n = true
67     ,lang .code:n =
68     {
69         \pdfmanagement_add:nnn {Catalog} {Lang}{(#1)}
70         \AddToDocumentProperties [document]{lang}{#1}
71     }
72     ,xmpmeta .bool_gset:N = \g_pdfmeta_xmp_bool %see pdfmeta unused and undefined for now!
73     % this uses internal command from pdfmeta, it should probably move there ...

```

```

74 ,pdfstandard .code:n =
75 {
76   \exp_args:Nnx
77   \keys_set:nn {document / metadata} {_pdfstandard=\str_uppercase:n{#1}}
78 }
79 ,_pdfstandard .choices:nn =
80 {A-1B,A-2A,A-2B,A-2U,A-3A,A-3B,A-3U,A-4}
81 {
82   \prop_if_exist:cT { g__pdfmeta_standard_pdf/#1_prop }
83   {
84     \prop_gset_eq:Nc \g__pdfmeta_standard_prop { g__pdfmeta_standard_pdf/#1 _prop }
85   }
86   \AddToDocumentProperties [document]{pdfstandard}{#1}
87 }
88 ,_pdfstandard / unknown .code:n =
89 {
90   \msg_warning:nnn{pdf}{unknown-standard}{#1}
91 }
92 ,testphase .multichoice:
93 ,testphase / tagpdf .code:n =
94 {
95   \tl_gput_right:Nn\g__pdfmanagement_testphase_tl
96   {
97     \file_if_exist_input:nF {tagpdf-latex-lab-testphase.ltx}
98     {
99       \RequirePackage{tagpdf}
100      \AddToDocumentProperties [document]{testphase/tagpdf}{loaded}
101      \tagpdfsetup{activate,paratagging,interwordspace}
102      \AddToDocumentProperties [document]{tagging}{active}
103      \AddToDocumentProperties [document]{tagging/para}{active}
104      \AddToDocumentProperties [document]{tagging/interwordspace}{active}
105    }
106  }
107 }
108 ,testphase / unknown .code:n =
109 {
110   \tl_gput_right:Nn\g__pdfmanagement_testphase_tl
111   {
112     \AddToDocumentProperties [document]{testphase/#1}{loaded}
113     \file_if_exist_input:nF {#1-latex-lab-testphase.ltx}
114     {
115       \msg_warning:nnn{meta}{latex-lab-pkg-missing}{#1}
116       \AddToDocumentProperties [document]{testphase/#1}{missing}
117     }
118   }
119 }
120 ,activate .multichoice:
121 ,activate / tagging .code:n =
122 {
123   \PackageWarning{pdfmanagement-testphase}
124   {The~activate~key~is~deprecated.\MessageBreak
125   Tagging~is~activated~with~'testphase=tagpdf'~directly}{ }
126 }
127 ,debug .code:n =

```

```

128     {
129       \keys_set:nn { document / metadata / debug } {#1}
130     }
131   ,debug / para .code:n =
132     {
133       \AddToHook
134       {
135         package/tagpdf/after
136       }
137       {
138         \tagpdfsetup{paratagging-show}
139       }
140     }
141   ,debug / log .code:n =
142     {
143       \AddToHook
144       {
145         package/tagpdf/after
146       }
147       {
148         \tagpdfsetup{log=#1}
149       }
150     }
151   ,debug / tagpdf .code:n =
152     {
153       \AddToHook
154       {
155         package/tagpdf/after
156       }
157       {
158         \RequirePackage{tagpdf-debug}
159       }
160     }
161   ,debug / uncompress .code:n =
162     {
163       \pdf_uncompress:
164     }
165   ,debug / pdfmanagement .bool_gset:N = \g__pdfmanagement_active_bool
166   ,debug / firstaidoff .clist_gset:N = \g__pdfmanagement_firstaidoff_clist
167 }
168
169

```

3.1 Messages

```

170 %\Ufi is meta the right module name here?
171 \prop_gput:Nnn \g_msg_module_type_prop { meta } { LaTeX }
172 \prop_gput:Nnn \g_msg_module_name_prop { meta } { DocumentMetadata }
173
174 \msg_new:nnn { meta } { after-class }
175     {
176       \token_to_str:N \DocumentMetadata \c_space_tl
177       should-be-used-only-before-\token_to_str:N\documentclass
178     }

```

```

179 \msg_new:nnn { meta } { latex-lab-pkg-missing }
180     {
181         LaTeX-lab-package~'#1'~not~found.
182     }
183 \ExplSyntaxOff\makeatother
184 </code>

```

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