

The `latex-lab-title` package

Changes related to the tagging of the title

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Abstract

1 Introduction

This module contains changes to improve the tagging (in the standard classes) of the title created with the `\maketitle` command. It also improves the setting of the metadata related to the title and the author.

1.1 Tagging of the title

For basic tagging of the printed title there are basically three things to do:

- The actual title should be tagged with a suitable tag.
- The tabular used to format the author list should *not* be tagged as a tabular.
- `\maketitle` redefines footnote internals. These must be made tagging aware.
- There should be some structure that surrounds the whole title block.

1.2 New control over the tagging of title and headings

HTML pages and accessibility API typically do not distinguish titles as distinct from section headings. Titles are marked up as `<h1>`, following heading commands are marked up as `<h2>` etc. This allows the title to be announced by screen readers and take part in navigation.

For PDF 1.7 the PDF association recommends to tag a title like a normal paragraph (<https://pdfa.org/how-to-tag-titles-in-pdf-documents/>) and to start the tagging of the heading commands with `<h1>`. Such titles are not announced and do not take part in the navigation.

PDF 2.0 introduced a new **Title** structure element which should in principle allow titles to be distinguished, however at the present time it has no defined mapping to the System Accessibility API, and the [derivation to HTML](#) maps it to `<div>`. As such, tagging with **Title** is equivalent to tagging with **Div** or **NonStruct** and does not produce accessible titles. Title are simply read as the underlying text.

*Initial implementation done by Ulrike Fischer

Given that the standard mappings to the Accessibility API and to HTML may change, it is not always clear what is the best tagging to use at the present time. The code therefore introduces some options to allow document authors some control here.

L^AT_EX uses the tag **title-block** to surround the title, author and date. This tag is role mapped to a **Div**.

Author and date are surrounded by the tags **title-author** and **title-date**. These tags are role mapped to **P**

The title is surrounded by the tag **title-text**.

In PDF 2.0 **title-text** is by default role mapped to **Title**, in PDF 1.7 and in the global Rolemap in PDF 2.0, **Title** it is in turn role mapped to **P**. **part-heading** is mapped to **Title**.

The following options allow to change the tagging. They also affect how headings are tagged.

The options can be set by setting the **title** key either in the preamble with `\tagpdfsetup` or in the `tagging-setup` key of `\DocumentMetadata`.

The key **title** knows the values

Title This is the default already described above: **title-text** is role mapped to **Title**, The tagging of heading commands starts with **H1**. The heading of a `\part` is tagged with **part-heading** and role mapped to **Title**.

H1 title-text is role mapped to **H1**. The tagging of heading commands starts with **H2**. **part-heading** is mapped to **H1**. In current systems this produces the most accessible behavior. Documents tagged in this way will pass all mechanically checkable requirements of PDF/UA-2. There is a “human check” that titles should be tagged using **Title** but it seems reasonable to assert that titles in L^AT_EX documents are structural elements that should be reported to AT and that as currently specified they are not suitable for **Title** which is an anonymous container with no defined accessibility properties.

html In PDF 1.7 this behaves like the H1 value. In PDF 2.0 **title-text** is role mapped to **h1** in the html namespace, which in turn is role mapped to **Title**. The first heading command is role mapped to **h2** in the HTML namespace, which in turn is role mapped to **H1** in the PDF name space. The global Rolemap is the same as the default case. This mapping can improve derivation to html as derivation can (but doesn’t have to) stop when it encounters a tag in the HTML namespace.

aria This additionally adds an Aria-role **heading** with level 1 to the **title-text** structure and Aria-roles **heading** with level 2–7 to the heading commands. **part-heading** gets an Aria-role **heading** with level 1. It doesn’t change the role mapping, and can in theory be combined with the other **title** options.

1.3 Metadata

A second task related to title is to store the authors and the title text (or a shorter version) inside the XMP-metadata and (in PDF 1.7 or lower) in the Info dictionary. Currently this can only be set if hyperref is loaded and requires the use of the `pdftitle` and `pdfauthor` keys. The new code therefore extends the `\title` and `\author` commands: They store their argument and use them at the end of the document for the PDF metadata if the data hasn’t been given in another way. The code also gives `\title` and `\author` an optional argument where the PDF title or author can be given with in a key-value syntax. As with hyperref it is possible to store titles in more than one language:

```

\title
  [pdftitle =
    {[en]English Title,[de] Deutscher Titel,[fr]{titre français, avec comma}}]
  {Document title}

```

It is also possible to set a subtitle which is then stored in the XMP-metadata:

```

\title
  [pdfsubtitle =
    {[en]English Subtitle,[de] Deutscher Subtitel,[fr]{subtitre français, avec comma}}]
  {Document title}

```

If using the `pdfauthor` key authors should be separated by commas, and to hide commas in a name inside braces if needed:

```

\author[pdfauthor = {Bär, Peter Anteater, {Riley, the sloth}}]{\ldots}

```

If `hyperref` is loaded there is no difference to the `pdftitle` and `pdfauthor` key used in `\hypersetup`. Both can be used (and the last key used will win).

1.4 Open questions and TODOs

- Writing into the Info dictionary needs to convert the input into a PDF string. This is here done with a simple version of `hyperref`'s `\pdfstringdef`, similar code exist also in the generic `hyperref` driver. This should be moved into a better place module.
- Is it sensible to enhance `\author` and `\title` with an optional argument as done here? An advantage is that it is rather light-weight and doesn't require to decide how this values should be set in `\DocumentMetadata` (and would also work without `\DocumentMetadata`. But a problem could be that various classes and packages already extend this commands with other optional arguments.
- Some of the definitions related to metadata should perhaps be moved into `l3pdfmeta`.
- Are the names `pdftitle` and `pdfauthor` ok?
- The patch for `\thanks` to get a `rlap-footnotemarker` looks wrong. This probably means that some configuration option is missing in the footnote code.

2 Implementation

```

1 <*package>
2 <@@=tag>
3 \ProvidesExplPackage {latex-lab-testphase-title} {\ltlabtitledate} {\ltlabtitleversion}
4 {Changes related to the tagging of the title}

```

2.1 Separating the authors

We redefined `\and` to separate authors in individual structures

```

5 \DeclareRobustCommand\and{%    % \begin{tabular}

```

```

6 \end{tabular}\UseTaggingSocket{inline/end}{}%
7 \hskip 1em \@plus.17fil%
8 \UseTaggingSocket{inline/begin}{tag=title-author,attribute-class=center}%
9 \begin{tabular}{t}{c}}% % \end{tabular}

```

2.2 \maketitle in article class

```

10 \cs_new_protected:Npn \__tag_patch_thanks:n #1
11 {
12   \rlap{\footnotemark}
13   \protected@xdef\@thanks{\@thanks
14     \protect\footnotetext[\the\c@footnote]{#1}}
15 }

```

The no-titlepage version of article, report and book

```

16 \cs_new_protected:Npn \__tag_patch_maketitle:
17 {
18   \par
19   \begingroup

```

Disable table tagging

```

20   \tagpdfsetup{table/tagging=false}%
21   \renewcommand\thefootnote{\@fnsymbol\c@footnote}%

```

the original definition redefines \@makefnmark and \@makefntext to get an rlap-mark in the text without affecting the mark in the note (which gives by the way a wrong link area with hyperref). There seem to be currently no good way in the footnote to configure this, so we redefine \thanks instead

```

22   \cs_set_eq:NN \thanks \__tag_patch_thanks:n
23   \if@twocolumn
24     \ifnum \col@number=\@ne
25       \@maketitle
26     \else
27       \twocolumn[\@maketitle]%
28     \fi
29   \else
30     \newpage
31     \global\@topnum\z@ % Prevents figures from going at top of page.
32     \@maketitle
33   \fi
34   \thispagestyle{plain}\@thanks
35 \endgroup
36 \setcounter{footnote}{0}%
37 \global\let\thanks\relax
38 \global\let\maketitle\relax
39 \global\let\@maketitle\relax
40 \global\let\@thanks\@empty
41 \global\let\@author\@empty
42 \global\let\@date\@empty
43 \global\let\@title\@empty
44 \global\let\title\relax
45 \global\let\author\relax
46 \global\let\date\relax
47 \global\let\and\relax
48 }

```

We must also change `\@maketitle` to insert a **Title** tag. We have here two options: We can surround the whole block with a **Title** or only the title text (but not both). As default the title text has the **Title** tag and the block is a **Part** (from the symbolic name **para/semantic**), but this can be changed by reassigning the symbolic name **title/block** and changing the plug of the tagging socket to the transparent plug, e.g.,

```
\AssignStructureRole{title/block}{Title}
\AssignTaggingSocketPlug{title}{transparent}
```

Note that in PDF 1.7 the **Title** tag is not a standard tag, it is a user defined and by default rolemapped to **P**. If **Title** should be used for the title block the rolemapping must be adjusted, e.g., to **Part** or **Sect**.

```
49 \IfSocketExistsF{tagsupport/title}
50 {
51   \NewTaggingSocket{title}{2}
52 }
53 \NewTaggingSocketPlug{title}{kernel}
54 {
55   \par
56   \group_begin:
57     \tagpdfparaOff
58     \tag_struct_begin:n{tag=\UseStructureName{title/text},attribute-class=center}
59     \tagmcbegin{ }#2\tagmcend
60     \tag_struct_end:
61   \par
62   \group_end:
63 }
```

An aria attribute to mark up the title-block:

```
64 \tagpdfsetup{role/new-attribute={aria-banner}{/O/ARIA-1.1/role (banner)}}
65 \AssignTaggingSocketPlug{title}{kernel}
66 \cs_new_protected:Npn \__tag_patch_@maketitle:
67 {
68   \newpage
69   \null
70   \vskip 2em%
71   \begin{center}%
72     [tagging-suppress-paras=true,
73     tagging-recipe=standalone,
74     tag-name=\UseStructureName{title/block},
75     tag-attr-class=aria-banner]
76   \let \footnote \thanks
```

By default this socket adds **Title** around the title text. In PDF 1.7 **Title** is rolemapped to **P** and the socket adapts the **para/textblock** to avoid that we get an **P** inside a **P**. One can assign the **transparent** plug to the socket if **Title** should be used for the title block instead.

```
77 {\LARGE\UseTaggingSocket{title}{ }\@title}\par}
78 \vskip 1.5em%
79 {\large
80   \AssignStructureRole{para/textblock}{title-author}%
81   \lineskip .5em%
82   \begin{tabular}[t]{c}%
83     \@author
84   \end{tabular}\par}%

```

```

85     \vskip 1em%
86     {\large
87       \AssignStructureRole{para/textblock}{title-date}%
88       \@date}%
89   \end{center}%
90   \par
91   \vskip 1.5em
92 }
93

```

The titlepage variant:

```

94 \cs_new_protected:Npn \__tag_patch_maketitle_page:
95   {\begin{titlepage}%

```

disable table tagging

```

96   \tagpdfsetup{table/tagging=false}%
97   \let\footnotesize\small
98   \let\footnoterule\relax
99   \let \footnote \thanks
100  \null\vfil
101  \vskip 60\p@
102  \begin{center}%
103    [tagging-suppress-paras=true,
104    tagging-recipe=standalone,
105    tag-name=\UseStructureName{title/block},
106    tag-attr-class=aria-banner]

```

By default this socket adds **Title** around the title text. In PDF 1.7 **Title** is rolemapped to P and the socket adapts the **para/textblock** to avoid that we get an **P** inside a **P**. One can assign the **transparent** plug to the socket if **Title** should be used for the title block instead.

```

107   {\LARGE\UseTaggingSocket{title}{-}{\@title}\par}
108   \vskip 3em%
109   {\large
110     \AssignStructureRole{para/textblock}{title-author}%
111     \lineskip .75em%
112     \begin{tabular}[t]{c}%
113       \@author
114     \end{tabular}\par}%
115     \vskip 1.5em%
116   {\large
117     \AssignStructureRole{para/textblock}{title-date}%
118     \@date
119     \par}% % Set date in \large size.
120   \end{center}\par
121   \@thanks
122   \vfil\null
123   \end{titlepage}%
124   \setcounter{footnote}{0}%
125   \global\let\thanks\relax
126   \global\let\maketitle\relax
127   \global\let\@thanks\@empty
128   \global\let\@author\@empty
129   \global\let\@date\@empty

```

```

130 \global\let\@title\@empty
131 \global\let\title\relax
132 \global\let\author\relax
133 \global\let\date\relax
134 \global\let\and\relax
135 }
136

```

Map the new commands onto \maketitle:

```

137 \AddToHook{class/article/after}
138 {
139   \if@titlepage
140     \cs_set_eq:NN \maketitle \__tag_patch_maketitle_page:
141   \else
142     \cs_set_eq:NN \maketitle \__tag_patch_maketitle:
143     \cs_set_eq:NN \@maketitle \__tag_patch_@maketitle:
144   \fi
145 }
146 \AddToHook{class/report/after}
147 {
148   \if@titlepage
149     \cs_set_eq:NN \maketitle \__tag_patch_maketitle_page:
150   \else
151     \cs_set_eq:NN \maketitle \__tag_patch_maketitle:
152     \cs_set_eq:NN \@maketitle \__tag_patch_@maketitle:
153   \fi
154 }
155 \AddToHook{class/book/after}
156 {
157   \if@titlepage
158     \cs_set_eq:NN \maketitle \__tag_patch_maketitle_page:
159   \else
160     \cs_set_eq:NN \maketitle \__tag_patch_maketitle:
161     \cs_set_eq:NN \@maketitle \__tag_patch_@maketitle:
162   \fi
163 }

```

2.3 Title options

Depending on if there are chapters or not, we have a different offset for the headings from their level.

```

164 \AddToHook{begindocument}
165 {
166   \@ifundefined{chapter}
167     {\tl_const:Nn \c__tag_title_offset_tl {1}}
168     {\tl_const:Nn \c__tag_title_offset_tl {2}}
169 }

```

2.3.1 Title (default)

```

170 \keys_define:nn {__tag/setup}
171 {
172   title .choice: ,
173   title/Title .code:n =

```

```

174 {
175   \AddToHook{begindocument}
176   {
177     \@ifundefined{chapter}
178     {
179       \AssignStructureRole{title/text}{title-text/latex}
180       \AssignStructureRole{sec/-1/title}{part-heading/latex}
181       \AssignStructureRole{sec/1/title}{section-heading/latex}
182       \AssignStructureRole{sec/2/title}{subsection-heading/latex}
183       \AssignStructureRole{sec/3/title}{subsubsection-heading/latex}
184       \AssignStructureRole{sec/4/title}{paragraph-heading/latex}
185       \AssignStructureRole{sec/5/title}{subparagraph-heading/latex}

```

Reassign the default mapping for the global rolemap. TODO: create a simpler interface in tagpdf

```

186   \tagpdfsetup
187   {
188     role/new-tag={title-text/Title},
189     role/new-tag={part-heading/Title},
190     role/new-tag={section-heading/H1},
191     role/new-tag={subsection-heading/H2},
192     role/new-tag={subsubsection-heading/H3},
193     role/new-tag={paragraph-heading/H4},
194     role/new-tag={subparagraph-heading/H5}
195   }
196 }
197 {
198   \AssignStructureRole{title/text}{title-text/latex}
199   \AssignStructureRole{sec/-1/title}{part-heading/latex}
200   \AssignStructureRole{sec/0/title}{chapter-heading/latex-book}
201   \AssignStructureRole{sec/1/title}{section-heading/latex-book}
202   \AssignStructureRole{sec/2/title}{subsection-heading/latex-book}
203   \AssignStructureRole{sec/3/title}{subsubsection-heading/latex-book}
204   \AssignStructureRole{sec/4/title}{paragraph-heading/latex-book}
205   \AssignStructureRole{sec/5/title}{subparagraph-heading/latex-book}
206   \tagpdfsetup
207   {
208     role/new-tag={title-text/Title},
209     role/new-tag={part-heading/Title},
210     role/new-tag={chapter-heading/H1},
211     role/new-tag={section-heading/H2},
212     role/new-tag={subsection-heading/H3},
213     role/new-tag={subsubsection-heading/H4},
214     role/new-tag={paragraph-heading/H5},
215     role/new-tag={subparagraph-heading/H6}
216   }
217 }
218 }
219 }
220 }

```

2.3.2 Aria

The aria option adds aria attributes to **title-text** and the headings. Currently it cannot be disabled again.

```

221 \keys_define:nn {__tag/setup}
222 {
223     title/aria .code:n =
224     {

```

Set up the attributes and plugs if they do not exist yet.

```

225     \IfSocketPlugExistsF {sec/title/begin}{aria}
226     {

```

Set up the heading level attributes: `\part` and `\chapter` have always the same attribute. For the other sectioning commands it depends on the class.

```

227         \int_step_inline:nn {7}
228         {
229             \keys_set:nn {__tag/setup}
230             {
231                 role/new-attribute*=
232                 {aria-heading-##1}{/0/ARIA-1.1/role (heading)/aria-level-##1}
233             }
234         }

```

The plug to add an aria attribute to the title text:

```

235     \NewTaggingSocketPlug{title}{aria}
236     {
237         \par
238         \group_begin:
239         \tagpdfparaOff
240         \tag_struct_begin:n
241         {
242             tag=\UseStructureName{title/text},
243             attribute-class={aria-heading-1,center}
244         }
245         \tagmcbegin{}##2\tagmcend
246         \tag_struct_end:%
247         \par
248         \group_end:
249     }

```

We add the attribute class to the display headings:

```

250     \NewTaggingSocketPlug{sec/title/begin}{aria}
251     {
252         \int_compare:nNnTF { \int_eval:n { \use_i:nn ##1 } } < {1}

```

`\part` (level -1) and `\chapter` (level 0) should use aria-heading-1 and aria-heading-2

```

253         {
254             \__tag_sec_title_begin:nnn ##1
255             {attribute-class={aria-heading-\int_eval:n{ \use_i:nn ##1 + 2}}}
256         }

```

`\section` (level 1) should be mapped to aria-heading 3 in a book class and aria-heading 2 in article.

```

257         {
258             \__tag_sec_title_begin:nnn ##1
259             {attribute-class={aria-heading-\int_eval:n{ \use_i:nn ##1 + \c__tag_title_offs
260             }
261         }

```

And now the run-in headings. We assume that `\part` and `\chapter` are not a run-in heading. TODO pass the level in a better way

```

262     \NewTaggingSocketPlug{sec/title/split}{aria}
263     {
264         \tag_struct_gput:nnn
265         {\tag_get:n{struct_num}}
266         {C}
267         {/aria-heading-\int_eval:n{ \l__head_level_int +\c__tag_title_offset_tl }}
268         \__tag_sec_title_split:
269     }
270 }

```

And now activate the plugs

```

271     \AssignTaggingSocketPlug{title}{aria}
272     \AssignTaggingSocketPlug{sec/title/begin}{aria}
273     \AssignTaggingSocketPlug{sec/title/split}{aria}
274 }
275 }

```

2.3.3 H1

The H1 option role maps **title-text** to H1 and headings one level down. We need different versions depending on the PDF version. As tagpdf resets the name space of the heading commands in the begindocument hook, we have to use that too.

```

276 \pdf_version_compare:NnTF < {2.0}
277 {
278     \keys_define:nn {__tag/setup}
279     {
280         title/H1 .code:n =
281         {
282             \AddToHook{begindocument}
283             {
284                 \@ifundefined{chapter}
285                 {
286                     \tagpdfsetup
287                     {
288                         role/new-tag={title-text/H1},
289                         role/new-tag={part-heading/H1},
290                         role/new-tag={section-heading/H2},
291                         role/new-tag={subsection-heading/H3},
292                         role/new-tag={subsubsection-heading/H4},
293                         role/new-tag={paragraph-heading/H5},
294                         role/new-tag={subparagraph-heading/H6}
295                     }
296                 }
297             }
298             \tagpdfsetup
299             {
300                 role/new-tag={title-text/H1},
301                 role/new-tag={part-heading/H1},
302                 role/new-tag={chapter-heading/H2},
303                 role/new-tag={section-heading/H3},
304                 role/new-tag={subsection-heading/H4},
305                 role/new-tag={subsubsection-heading/H5},

```

```

306         role/new-tag={paragraph-heading/H6},
307         role/new-tag={subparagraph-heading/P}
308     }
309 }
310 }
311 }
312 }
313 }

```

PDF 2.0.

```

314 {
315   \keys_define:nn {__tag/setup}
316   {
317     title/H1 .code:n =
318     {
319       \AddToHook{begindocument}
320       {
321         \@ifundefined{chapter}
322         {
323           \tag_if_tag_known:nnF {title-text}{latex-title-H1}
324           {
325             \tagpdfsetup
326             {
327               role/new-NS={latex-title-H1}{https://www.latex-project.org/ns/title-H1}{H1}
328               role/new-tag={tag=title-text,tag-namespace=latex-title-H1,role=H1},
329               role/new-tag={tag=part-heading,tag-namespace=latex-title-H1,role=H1},
330               role/new-tag={tag=section-heading,tag-namespace=latex-title-H1,role=H2},
331               role/new-tag={tag=subsection-heading,tag-namespace=latex-title-H1,role=H3},
332               role/new-tag={tag=subsubsection-heading,tag-namespace=latex-title-H1,role=H4},
333               role/new-tag={tag=paragraph-heading,tag-namespace=latex-title-H1,role=H5},
334               role/new-tag={tag=subparagraph-heading,tag-namespace=latex-title-H1,role=H6}
335             }
336           }
337           \AssignStructureRole{title/text}{title-text/latex-title-H1}
338           \AssignStructureRole{sec/-1/title}{part-heading/latex-title-H1}
339           \AssignStructureRole{sec/1/title}{section-heading/latex-title-H1}
340           \AssignStructureRole{sec/2/title}{subsection-heading/latex-title-H1}
341           \AssignStructureRole{sec/3/title}{subsubsection-heading/latex-title-H1}
342           \AssignStructureRole{sec/4/title}{paragraph-heading/latex-title-H1}
343           \AssignStructureRole{sec/5/title}{subparagraph-heading/latex-title-H1}
344         }
345       }
346     }
347   }
348 }

```

for book classes

```

345 {
346   \tag_if_tag_known:nnF {title-text}{latex-title-H1-book}
347   {
348     \tagpdfsetup
349     {
350       role/new-NS={latex-title-H1-book}{https://www.latex-project.org/ns/title-H1-book}{H1}
351       role/new-tag={tag=title-text,tag-namespace=latex-title-H1-book,role=H1},
352       role/new-tag={tag=part-heading,tag-namespace=latex-title-H1-book,role=H1},
353       role/new-tag={tag=chapter-heading,tag-namespace=latex-title-H1-book,role=H1},
354       role/new-tag={tag=section-heading,tag-namespace=latex-title-H1-book,role=H2},
355       role/new-tag={tag=subsection-heading,tag-namespace=latex-title-H1-book,role=H3},
356       role/new-tag={tag=subsubsection-heading,tag-namespace=latex-title-H1-book,role=H4}
357     }
358   }
359 }

```

```

357         role/new-tag={tag=paragraph-heading,tag-namespace=latex-title-H1-book,ro
358         role/new-tag={tag=subparagraph-heading,tag-namespace=latex-title-H1-book
359     }
360 }
361 \AssignStructureRole{title/text}{title-text/latex-title-H1-book}
362 \AssignStructureRole{sec/-1/title}{part-heading/latex-title-H1-book}
363 \AssignStructureRole{sec/0/title}{chapter-heading/latex-title-H1-book}
364 \AssignStructureRole{sec/1/title}{section-heading/latex-title-H1-book}
365 \AssignStructureRole{sec/2/title}{subsection-heading/latex-title-H1-book}
366 \AssignStructureRole{sec/3/title}{subsubsection-heading/latex-title-H1-book}
367 \AssignStructureRole{sec/4/title}{paragraph-heading/latex-title-H1-book}
368 \AssignStructureRole{sec/5/title}{subparagraph-heading/latex-title-H1-book}
369 }
370 }
371 }
372 }
373 }

```

2.3.4 html

In PDF 1.7 this behaves like the H1 value. In PDF 2.0 **title-text** is role mapped to **h1** in the html namespace, which in turn is role mapped to **Title**. The first heading command is role mapped to **h2** in the HTML namespace, which in turn is role mapped to **H1** in the PDF name space. The global Rolemap is the same as the default case. This mapping can improve derivation to html as derivation can (but doesn't have to) stop when it encounters a tag in the HTML namespace.

```

374 \pdf_version_compare:NnTF < {2.0}
375 {
376   \keys_define:nn {__tag/setup}
377   {
378     title/html .code:n =
379     {
380       \keys_set:nn {__tag/setup}{title=H1}
381     }
382   }
383 }
384 {
385   \keys_define:nn {__tag/setup}
386   {
387     title/html .code:n =
388     {
389       \tag_if_tag_known:nnF { h1 }{ html }
390       {
391         \keys_set:nn {__tag/setup}
392         {
393           role/new-NS={html}{http://www.w3.org/1999/xhtml}{},
394           role/new-tag={tag=h1,tag-namespace=html,role=Title},
395           role/new-tag={tag=h2,tag-namespace=html,role=H1},
396           role/new-tag={tag=h3,tag-namespace=html,role=H2},
397           role/new-tag={tag=h4,tag-namespace=html,role=H3},
398           role/new-tag={tag=h5,tag-namespace=html,role=H4},
399           role/new-tag={tag=h6,tag-namespace=html,role=H5}
400         }

```

```

401     }
402     \AddToHook{begindocument}
403     {
404         \@ifundefined{chapter}
405         {
406             \AssignStructureRole{title/text}{h1}
407             \AssignStructureRole{sec/-1/title}{h1}
408             \AssignStructureRole{sec/1/title}{h2} %section role mapped to H1
409             \AssignStructureRole{sec/2/title}{h3}
410             \AssignStructureRole{sec/3/title}{h4}
411             \AssignStructureRole{sec/4/title}{h5}
412             \AssignStructureRole{sec/5/title}{h6}
413         }
414         {
415             \AssignStructureRole{title/text}{h1}
416             \AssignStructureRole{sec/-1/title}{h1}
417             \AssignStructureRole{sec/0/title}{h2}
418             \AssignStructureRole{sec/1/title}{h3} %section role mapped to H1
419             \AssignStructureRole{sec/2/title}{h4}
420             \AssignStructureRole{sec/3/title}{h5}
421             \AssignStructureRole{sec/4/title}{h6}
422         }
423     }
424 }
425 }
426 }

```

2.4 Helper commands to set metadata

Some temp variables

```

427 \str_new:N \g__tag_title_tmpa_str
428 \str_new:N \l__tag_title_tmpa_str
429 \tl_new:N \l__tag_title_tmpa_tl
430 \seq_new:N \l__tag_title_tmpa_seq

```

We ensure that the default definitions of \@title and \@author are robust:

```

431 \protected\def\@title{\@latex@error{No~\noexpand\title given}\@ehc}
432 \protected\def\@author{\@latex@warning{No~\noexpand\author given}}

```

A helper command to convert the title into a pdfstring similar to \pdfstringdef.

```

433 \cs_new_protected:Npn \__tag_title_pdfstring:nnN #1 #2 #3 % #1 text, #2 e.g. utf16/hex
434 {
435     \group_begin:
436     \pdf_purify:nN {#1}\l__tag_title_tmpa_tl
437     \pdf_string_from_unicode:nVN { #2 } \l__tag_title_tmpa_tl \l__tag_title_tmpa_str
438     \str_gset_eq:NN \g__tag_title_tmpa_str\l__tag_title_tmpa_str
439     \group_end:
440     \str_set_eq:NN #3 \g__tag_title_tmpa_str
441 }
442 \cs_generate_variant:Nn\__tag_title_pdfstring:nnN {e}

```

2.5 Extend title to set metadata

At first a variable to store the title, as \@title is emptied by L^AT_EX.

```
443 \tl_new:N \g__tag_title_title_tl
```

Now we redefine `\title` so that it stores the title, and processes keys in the optional argument. We use `hyp` as module name for the key as this means that if `hyperref` is loaded its definition of `pdftitle` will be used – at some time probably this should be moved out of `hyperref` so that we have only one definition.

```
444 \RenewDocumentCommand\title{0}{m}
445 {
446   \gdef\@title{#2}
447   \tl_gset_eq:NN\g__tag_title_title_tl\@title
448   \keys_set:nn {hyp}{#1}
449 }
```

Now we define the `pdftitle` key. This is more or less the same definition as in the generic `hyperref` driver.

```
450 \regex_new:N\l__tag_title_optlang_regex
451 \regex_set:Nn\l__tag_title_optlang_regex {\A\[[A-Za-z\-\-]+\]\(.*\)}
452 \cs_generate_variant:Nn \clist_item:nn {on}
```

and now the keys.

```
453 \keys_define:nn { hyp }
454 {
455   pdftitle .code:n =
456   {
457     \tl_if_blank:nTF {#1}
458     {
459       \pdfmanagement_remove:nn {Info}{Title}
460     }
461     {
462       \tl_set:Nn\l__tag_title_tmpa_tl {\clist_item:on{#1}{1}}
463       \regex_extract_once:NVN
464         \l__tag_title_optlang_regex
465         \l__tag_title_tmpa_tl
466         \l__tag_title_tmpa_seq
467       \seq_if_empty:NTF\l__tag_title_tmpa_seq
468       {
469         \__tag_title_pdfstring:nnN {#1}{utf16/hex}\l__tag_title_tmpa_str
470       }
471       {
472         \__tag_title_pdfstring:enN
473         {\seq_item:Nn \l__tag_title_tmpa_seq{3}}{utf16/hex}\l__tag_title_tmpa_str
474       }
475       \str_if_eq:VnF\l__tag_title_tmpa_str{<FEFF>}
476       {
477         \pdfmanagement_add:nne {Info}{Title}{\l__tag_title_tmpa_str}
478       }
479     }
480     \AddToDocumentProperties[hyperref]{pdftitle}{#1}
481   }
482   ,pdfsubtitle .code:n = { \AddToDocumentProperties[hyperref]{pdfsubtitle}{#1} }
483 }
```

2.6 Extend \author to set metadata

At first a variable to store the authors, as \@author is emptied by L^AT_EX.

```
484 \tl_new:N \g__tag_title_author_tl
```

Now we redefine \author so that it stores the authors, and processes keys in the optional argument. We use hyp as module name for the key as this means that if hyperref is loaded its definition of pdfauthor will be used – at some time probably this should be moved out of hyperref so that we have only one definition.

```
485 \RenewDocumentCommand\author{0{ }m}
486 {
487   \gdef\@author{#2}
488   \tl_gset_eq:NN\g__tag_title_author_tl\@author
489   \keys_set:nn {hyp}{#1}
490 }
```

Now we define the pdfauthor key. This is more or less the same definition as in the generic hyperref driver.

```
491 \keys_define:nn { hyp }
492 {
493   pdfauthor .code:n =
494   {
495     \tl_if_blank:nTF {#1}
496     {
497       \pdfmanagement_remove:nn {Info}{Author}
498     }
499     {
500       \tl_set:N\l__tag_title_tmpa_tl {\clist_item:on{#1}{1}}
501       \regex_extract_once:NVN
502         \l__tag_title_optlang_regex
503         \l__tag_title_tmpa_tl
504         \l__tag_title_tmpa_seq
505       \seq_if_empty:NTF\l__tag_title_tmpa_seq
506       {
507         \__tag_title_pdfstring:nnN {#1}{utf16/hex}\l__tag_title_tmpa_str
508       }
509       {
510         \__tag_title_pdfstring:enN
511           {\seq_item:Nn \l__tag_title_tmpa_seq{3}}{utf16/hex}\l__tag_title_tmpa_str
512       }
513       \str_if_eq:VnF\l__tag_title_tmpa_str{<FEFF>}
514       {
515         \pdfmanagement_add:nne {Info}{Author}{\l__tag_title_tmpa_str}
516       }
517     }
518     \AddToDocumentProperties[hyperref]{pdfauthor}{#1}
519   }
520 }
```

2.7 Fallback for classes and packages that redefine \title or \author

If a class redefines \author and \title again, we try to retrieve at least the values.

```

521 \AddToHook{cmd/maketitle/before}
522 {
523   \tl_gset_eq:NN \g__tag_title_author_tl \@author
524   \tl_gset_eq:NN \g__tag_title_title_tl \@title
525 }

```

2.8 Finalize document

At last we set the title and the author at the end of document if that hasn't happened yet:

```

526 \AddToHook{shipout/lastpage}
527 {
528   \tl_if_empty:eT{\GetDocumentProperty{hyperref/pdftitle}}
529   {
530     \group_begin:
531     \cs_set_eq:NN\thanks \use_none:n
532     \pdf_purify:nN { \g__tag_title_title_tl } \l__tag_title_tmpa_tl
533     \tl_if_blank:oF { \l__tag_title_tmpa_tl }
534     { \keys_set:ne{hyp}{pdftitle={\exp_not:V\l__tag_title_tmpa_tl}}} }
535     \group_end:
536   }
537   \tl_if_empty:eT{\GetDocumentProperty{hyperref/pdfauthor}}
538   {
539     \group_begin:
540     \cs_set_eq:NN\thanks \use_none:n
541     \cs_set:Npn \and {,}
542     \pdf_purify:nN { \g__tag_title_author_tl } \l__tag_title_tmpa_tl
543     \tl_if_blank:oF { \l__tag_title_tmpa_tl }
544     { \keys_set:ne{hyp}{pdfauthor={\exp_not:V\l__tag_title_tmpa_tl}}} }
545     \group_end:
546   }

```

force display title, if an UA-standard is detected.

```

547   \tl_if_empty:eF{\GetDocumentProperty{document/pdfstandard-UA}}
548   {
549     \pdfmanagement_add:nnn {Catalog / ViewerPreferences } { DisplayDocTitle } { true }
550   }
551 }
552 \DeclareHookRule{shipout/lastpage}{latex-lab-testphase-title}{before}{pdfmanagement-testphase}
553 \end{package}
554 \end{*latex-lab}
555 \ProvidesFile{title-latex-lab-testphase.ltx}
556   [\l__tag_title_title_tl \l__tag_title_title_tl \l__tag_title_title_tl \space
557   Changes related to the tagging of the title]
558
559 \RequirePackage{latex-lab-testphase-title}
560
561 \end{*latex-lab}

```