

The `hyperref-generic` module

A generic driver for `hyperref`

The L^AT_EX Project*

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This module generates a generic driver `hgeneric.def/hgeneric-testphase.def` for `hyperref` meant to be used with the new L^AT_EX PDF management code. It is loaded automatically if the PDF management code is active. The name of the driver will change after the testphase.

The generic driver can be used with `pdflatex`, `lualatex`, `xelatex`, `latex` with `dvipdfmx`, `latex` with `dvips+ps2pdf`. `latex` with `dvips+distiller` could work too but is untested. `(x)dvipdfmx` will probably soon support `dvilualatex`, then this combination should work too.

The driver *requires* the new PDF management code, so documents wanting to use it should start like this (this requires L^AT_EX-2022-06-01 or newer):

```
\DocumentMetadata %loads the PDF management and activates it
{
  %% options
  %% e.g. pdf version, backend:
  % pdfversion=1.7,
  % backend = dvipdfmx
}
```

The new driver tries to be compatible with the standard `hyperref` drivers but there are nevertheless differences. Some of them due to the still experimental status of the driver, others are design decisions: one part of the project is to clean up and modernize the code. The following sections try to describe the differences but also to document some of the rationales of the changes, and to add some details and comments about the existing options and so to extend the `hyperref` manual.

1 Avoiding transition problems

Some code will only work properly after other packages have been adapted to the new PDF management code and the changes in this driver. This will take some time. Until then it is recommended to follow the following rules

- Package options are processed at the end of the driver, Class options are ignored. But not every option already works as package options, in some cases `hyperref` interferes. So it is recommended for most options —with the exception of a few mentioned below in section 9—to set them in `\hypersetup`, not as package option.

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- This driver uses the `l3color` module for the colors. All colors defined with `\color_set:nn` or `\color_set:nnn` will work. Colors defined with `xcolor` will work if they don't use one of the special color models not supported by `l3color` as `pdfmanagement-firstaid` contains a patch for `xcolor`. If the package `color` is used it is currently recommended to define colors after `hyperref`.
- Load a color package or `graphicx` to get the right page sizes.
- Report problems! Only known problem can be resolved.

2 Bookmarks / outlines

The new driver doesn't contain code to handle bookmarks/outlines. Instead it forces the loading of the `bookmark` package unless the package option `bookmarks=false` has been used. Currently `bookmark` is loaded at the end of the preamble so if commands from `bookmark` are needed in the preamble the document should load it manually. This is subject to change at some time in the future.

3 “Metadata”

“Metadata”, information about the document, are stored in a PDF in two places: The `/Info` dictionary and the XMP-metadata. `hyperref` only handles the `/Info` dictionary. The XMP-metadata are added by code from `l3pdfmeta`. (without the `pdfmanagement` the XMP-metadata can be added with packages like `pdfx` and `hyperxmp`).

The `/Info` dictionary can be filled with arbitrary keys, but the PDF viewer typically care only about a few, like `/Author`, `/Title` and `/Keywords`. A number of `/Info` keys, like dates and the producer, are added automatically by the engines and backends. Some of them can only be removed with special commands, some not at all. But—with the exception of `/Producer` when using the `dvips` backend—they can be overwritten.

The current handling of the metadata is problematic:

- External package like `hyperxmp` wants to access them too and for this had to patch a number of internal `hyperref` commands—which is a problem if the internal commands change (as happens with this new driver)
- `hyperref` (and also `hyperxmp`) tries to deduce some data from document commands like `\title` or `\author`—something that worked reasonably well when only some standard classes with well-known definitions of these command existed, but gets problematic with classes and packages which define more powerful commands knowing a variety of optional arguments to set authors and affiliations and title information.

To resolve some of this problem the driver will

- *Not* try deduce author and title from documents. They have to be set in `\hypersetup` with `pdfauthor` and `pdftitle`. It is recommended to separate more than one author by commas, and to hide commas inside braces if needed:

```
pdfauthor = {Bär, Peter Anteater, {Riley, the sloth}}
```

- It is possible to store titles in more than one language. If the value begins with an “optional argument” which represents a language tag, the value is taken as a comma list and split. The first value is used for the Info dictionary, the others are used in the XMP-metadata. Commas in a title must then be protected with braces:

```
pdftitle = {[en]English Title,[de] Deutscher Titel,[fr]{titre français, avec comm
```

- All values of relevant keys (including keys from the hyperxmp package) will be stored in a Metadata container, and can be retrieved with `\GetDocumentProperties`.

```
\edef\my@pdfauthor{\GetDocumentProperties{hyperref/pdfauthor}}
```

If the key hasn't be set, the result is empty. This gives external packages a public and reliable access to the data.

- `pdflang` is deprecated. Instead `\DocumentMetadata` should be used:

```
\DocumentMetadata{lang=de-DE}
```

The value can be retrieved as `document/lang`.

4 Dates

`hyperref` has a few keys to set dates. They typically expect the date in “PDF” format: `D:YYYYMMDDhhmmss+01'00'`.

5 PDF page size (mediabox)

The standard `hyperref` driver contain code to set the PDF page size. There is no real justification why this is done by `hyperref` apart from the fact that \LaTeX itself doesn't do it and that the needed special code could be added to the backend drivers.

In the new driver this code is gone. The reason is not that it is difficult to set the `MediaBox`, actually it could be done with one line of code:

```
\pdfmanagement_add:nnn{Page}{MediaBox}
  {[0-0~\dim_to_decimal_in_bp:n{\paperwidth}~
  \dim_to_decimal_in_bp:n{\paperheight}}}
```

The problem is to know which value to use (with the memoir class e.g. `\stockwidth` should be used instead of `\paperwidth`), and detecting this not a `hyperref` task. Instead the packages which change these values should also set the PDF page size. Also there are too many actors here: `color/graphicx`, `geometry`, the KOMA-classes, memoir, ... all try to set this.

So if the PDF page size is wrong: load one of the other packages setting it e.g. the `color` or the `graphicx` package.

6 Commands to create “external” references

`hyperref` has three commands related to external references like URL and file: `\url`, `\nolinkurl` and `\href`. The first two take one argument, while the last has two: the url and some free text.

`\url` and `\href` create link annotations. `\url` creates always an URI type, `\href` creates URI, GoToR and Launch depending on the structure of the argument.

`\href` has to create a (in the PDF) valid url or file name from its first argument. `\url` has to create a (in the PDF) valid url from its only argument and has also to print this argument as url. `\nolinkurl` only prints the url.

For the printing `\url` and `\nolinkurl` rely on the `url` package and its `\Url` command.

(Expandable) commands are expanded and special chars can also be input by commands but beside this no conversion is done: for all input `hyperref` basically assumes that the input is already a valid percent encoded url or a valid file name. `hyperref` also doesn't extend or add protocols.

As nowadays everyone is used to copy and paste links with all sorts of unicode into a browser and they work the `hyperref` input is clearly rather restricted.

So the new driver tries to extend the input and print options. Both `\href` and `\url` can now be told to accept non-ascii url's and to convert them internally to percent encoding. It is possible to define a standard protocol and so to avoid to have to type it all the time.

But extending the *print* options for `\url` and `\nolinkurl` while still using the `url`-package is hard to impossible in pdfL^AT_EX due to the way the `url` package works. Some chars can be added with the help of `\UrlSpecial` (at the cost of warnings) but it doesn't work for every input and documenting and explaining all the edge cases is no joy. So instead the new driver offers here the option to use different commands to format the printed output. It must be noted that this disable the special “hyphenation” method of url's.

6.1 Special problem: links to files

When a file is linked with `\href` than normally it is added as URI link. The exceptions are PDF's: for them PDF has the special type GoToR which allows also to link to a destination or a special page.

After a number of tests with various PDF viewer established that non-ascii files names don't work at all with a simple file name specification GoToR links now use a full filespec dictionary. This works better, but still no every PDF viewer support this correctly. on various system.

The following can be used to test viewers. It assumes that a `test.pdf`, a `grüßpdf.pdf` and a `grüße.txt` are in the current folder.

```
test-ascii  
test grüßpdf.pdf  
test grüße.txt
```

6.2 Splits

`\href` tries to be clever and to detect from the argument if a url or a file link or a launch command should be created.

The rules are not trivial, and they make the code complicated. This detection also makes it more difficult to handle special cases like non-ascii input for the link types.

For this reason three new commands have been create:

- `\hrefurl` for standard urls (and non-pdf files)
- `\hrefpdf` for references to pdf files
- `\hrefrun` for launch links

The new commands don't use prefixes like `\href`. Their argument should be the real content.

6.3 Options

All `\href` commands and `\url` have an option argument for keyval syntax. It accepts the following keys. Not all keys make sense for all keys, but they don't error, they are silently ignored. The optional argument can currently not be used together with the `\urldef` command.

key	applicable commands	note
<code>urlencode</code>	<code>\hrefurl</code>	if set the code will convert the argument to percent encoding. This allows non-ascii input.
<code>protocol</code>	<code>\hrefurl</code> , <code>\url</code>	This sets a prefix/protocol that is added to the url, see below.
<code>format</code>	<code>\url</code>	a command used to format the printed text. It replaces the standard <code>\Url</code> . This can improve non-ascii typesetting at the cost of losing the special line breaking.
<code>destination</code>	<code>\href</code> , <code>\hrefpdf</code>	A destination name in the PDF
<code>page</code>	<code>\href</code> , <code>\hrefpdf</code>	destination page, default: 1
<code>pdfremotestartview</code>	<code>\href</code> , <code>\hrefpdf</code>	start view, default: Fit
<code>ismap</code>	<code>\href</code> , <code>\hrefurl</code>	see PDF reference
<code>afrelationship</code>	<code>\href</code> , <code>\hrefpdf</code>	Changes the <code>/AFRelationship</code> key of the filespec dictionary. The value should be a PDF name without the starting slash.
<code>run-parameter</code>	<code>\hreflaunch</code>	run parameter (see the PDF reference)
<code>nextactionraw</code>	various	puts a <code>/Next</code> entry in the action dictionary (see the PDF reference)

The first four keys can be set also in `\hypersetup` for all following commands in the current group through the keys `href/urlencode`, `href/protocol`, `href/destination`, `href/format`.

It is possible to define own url commands with specific options e.g. with

```
\NewDocumentCommand\myurl{0{}}{\url[protocol=https://,format=\textsc,#1]}
```

7 Link decorations: border, color, OCG-color, ...

Some main changes are

- The default colors have been changed.

- Citations have by default no special color, they are colored like other internal links. You can use `citecolor` and `citebordercolor` to assign them a special color. This color is not reset if you use `allcolors` or switch to another color scheme. If you want the colors to follow `linkcolor` again you should remove the label `hyp/cite` and/or `hyp/citeborder` from the hook `hyp/link/cite`.
- a number of color schemes have been predefined.

7.1 Background information

With the standard drivers `hyperref` allows either to color the link text, or to use a border around it. There is also a (rather unknown) option `frenchlinks` to use small caps for some links instead of colors.

The *link border* is a setting in the PDF annotation directory. It can be colored and styled (with the `<xxx>bordercolor`, `pdfborderstyle` and `pdfhighlight` keys), but the exact look depends on the PDF viewer. Such decorations are normally not printed.

The *link text* is colored with the standard color commands for text. Such a color is also printed, which is often not wanted. The printing can be avoided in PDF with so-called OCG-layers: They allow to add variants of a text along with instructions which variant should be used for viewing and which for printing. `hyperref` implements a rather simple version for links: The link text is put in a box and printed twice with different colors on different OCG layers. As boxes are used such links can't be broken. The package `ocgx2` implements a more sophisticated version which allows to use it for links broken over lines and pages.

`hyperref` has keys to set the color and border for `link`, `url`, `file`, `menu` and `run` types. They correspond to the PDF annotation types `GoTo`, `URI`, `GoToR`, `Named` and `Launch`. Beside this there is a `anchorcolor` which isn't used at all, and `citecolor` which is a semantical category and doesn't fit to the other types.

In the standard drivers the decoration options are more or less exclusive and global: One of the options (`colorlinks`, `ocgcolorlinks`, or `borders`) has to be chosen in the preamble and is then used for the whole document and all link types. Only colors and eventually the border style can be adjusted locally. But there is no technical reason for these restrictions: It is quite possible to change all these attributes at any time both by link type and locally. The restrictions of the current implementation can only be explained by the age of the code: `hyperref` has been created at a time when memory was small and the main drivers were html and postscript based.

While link colors have been traditionally more or less under the control of `hyperref`, the situation with other format options, like the font, is more complicated. The font in `\url` is for example determined by `\Urlfont`, a command from the `url` package. In the case of internal (`GoTo`) references packages like `cleveref` or `biblatex` or `glossaries` offer formatting options too. Formatting here is often connected to semantics: an acronym should use a different font than a citation. While `hyperref` could offer options here, it would probably only clash with package formatting. It is more sensible not to interfere here. For this reason the `frenchlinks` option has been dropped.

7.2 New Keys

Some of the existing keys have been extended to allow individual setting for the link types `link`, `url`, `file` `menu` and `run`:

- Beside `pdfborder` there are also `linkborder`, `urlborder` etc

- Beside `pdfhighlight` there are also `linkhighlight`, `urlhighlight` etc
- Beside `pdfborderstyle` there are also `linkborderstyle`, `urlborderstyle` etc
- Beside `colorlinks` there are also `colorlink`, `colorurl` etc
- Beside `ocgcolorlinks` there are also `ocgcolorlink`, `ocgcolorurl`, etc TODO
- Beside `hidelinks` there are also `hidelink`, `hideurl`, etc
- `bordercolormodel` allows to set the model used in annotations, the allowed values are `rgb` or `cmymk`. `rgb` is the default. It does *not* change the model of text colors. Be aware that while the PDF format allows `cmymk` (4 numbers) in the `/C` key of an annotation, this is often ignored by pdf viewers and the colors can be wrong.
- The boolean keys `url`, `link`, `run`, `menu`, `file` allow to deactivate locally the link types.

`colorscheme` (*setup key*) The new key `colorscheme` allows to switch the colors (both for text and borders) with a key word. It takes one of the values `primary-colors` (the colors as `hyperref` uses normally), `phelype`, `daleif`, `szabolcsA`, `szabolcsB`, `tivv`, `julian`, `henryford`.

The names refer to the authors in answers and comments in <https://tex.stackexchange.com/questions/525261/better-default-colors-for-hyperref-links>.

The default is `phelype`.

7.3 Public interfaces

```

\l_hyp_annot_colorlink_bool
\l_hyp_annot_colorurl_bool
\l_hyp_annot_colorfile_bool
\l_hyp_annot_colorrurl_bool
\l_hyp_annot_colormenu_bool
\l_hyp_annot_ocgcolorlink_bool
\l_hyp_annot_ocgcolorurl_bool
\l_hyp_annot_ocgcolorfile_bool
\l_hyp_annot_ocgcolorrurl_bool
\l_hyp_annot_ocgcolormenu_bool

```

These boolean are used by the `colorlinks` and `ocgcolorlinks` and related keys. These keys insert hook code in the `pdfannot/link/<type>/begin` and `pdfannot/link/<type>/end` hooks. `<type>` is one of `GoTo`, `URI`, `GoToR`, `Named` or `Launch`.

`colorlinks` uses the label `hyp/color`, and `ocgcolorlinks` the label `hyp/ocg`.

They both use the same color names: `hyp/color/link`, `hyp/color/url`, `hyp/color/file`, `hyp/color/run`, `hyp/color/menu`.

The cite colors uses the names `hyp/color/cite` and `hyp/color/citeborder`.

The border colors aren't saved in color names currently, but if the need would arise it would possible to change this.

7.4 Changed behaviour

colorlinks `colorlinks` or `colorlinks=true` will as before disable the `pdfborder` (`colorlinks=false` will leave the `pdfborder` untouched), but it is possible to use the key in the document at any time, or to reenable the border if wanted. Internally `colorlinks` & friends will no longer define/undefine `\Hy@colorlink`, but instead use the hooks provided by the `l3pdfannot` package.

Color keys accept the following input syntax:

```
model based      urlbordercolor = [rgb]{1,1,0}
color expression urlbordercolor = red!50!blue
command          urlbordercolor = \mycolor
```

where `\mycolor` should expand to one of the other two syntax variants.

frenchlinks The option `frenchlinks` does nothing at all.

cite colors As mentioned above the support for `citecolor` and `citebordercolor` has been reduced. A package like `hyperref` can't keep track of such semantic contexts like `cite`, `acronym`, `glossaries` and `special references` and maintain keys for them. The keys are not completely dropped as this would affect packages like `natbib`, but they have been separated and are no longer affected by group keys like `allcolors` but must be set individually instead.

link margin The driver sets a default link margin—this is identical to `pdftex` and `luatex` driver, but a change for the `xetex` and `dvips` driver. The (undocumented) command `\setpdflinkmargin` does nothing. Use either the key `pdflinkmargin` or `\pdfannot_link_margin:n` to change the margin. See also the description in section 14 and in the `hyperref` manual.

8 PDF strings

`hyperref` uses a command called `\pdfstringdef` to convert text input into something that makes sense and is valid in a PDF string, e.g. in the bookmarks or in the info dictionary or as form field values.

As the handling of the outlines are delegated to the `bookmark` package, they will for now still use `\pdfstringdef`, but all other strings produced by this driver will use a new method based on the `expl3` commands `\text_purify:n` and `\str_set_convert:Nnnn`. For normal text it shouldn't matter, but a variety of commands and math are handled differently. Like with `\pdfstringdef` they are a number of ways to adjust the outcome of `\text_purify:n`. These are described in the `expl3` documentation `interface3.pdf`.

The new method is under heavy development!

Important differences here are

- *This new method requires that files are utf8-encoded* (at least if non-ascii chars are used in for PDF strings).
- *All robust commands are currently removed, unless an equivalent has been declared.*
- *Currently the new method is much more silent: it doesn't warn like hyperref if it removes commands.*

9 Package options from hyperref

The driver will process the package options at the end. But normally options should better be set with `\hypersetup` after the package has been loaded. This is also the case for options which normally don't work in `\hypersetup`. One option that currently doesn't work correctly as package option is `ocgcolorlinks`

Options that still must be set as package options are

- `backref`
- `CJKbookmarks` this key should not be used anymore. At some time it will be removed.
- `destlabel` (destination names are taken from `\label` if possible)
- `encap`
- `hyperfigures` (according to the `hyperref` manual it makes figures hyper links, but actually is a no-op for most drivers, and it does nothing with this driver either.)
- `hyperfootnotes`
- `hyperindex`
- `implicit` (redefine `LATEX` internals)
- `nesting` unneeded key, see comment below in 14. At some time it will be either removed or extended (if some use can be found).
- `pagebackref`
- `pdfpagelabels` (set PDF page labels)
- `psdextra` this loads some extra definitions used by `\pdfstringdef`. The new driver uses `\pdfstringdef` only for the bookmarks, for other strings it is not relevant.

Options that can be without problems set as package options are

- `debug`, `verbose` (a boolean)
- `bookmarks` (a boolean)
- `plainpages`
- `draft`, `final`
- `hypertextnames`
- `naturalnames`
- `pageanchor`

Ignored options:

- All driver options like `pdftex`, `dvipdfmx`, ...
- `raiselinks` (only used in the `dviwind`, `textures` and `tex4ht` driver anyway)
- `frenchlinks`
- `setpagesize`
- `addtopdfcreator`

10 Disabling links

hyperref knows like many packages the options `draft` and `final`. With hyperref they can be used as package options or in the preamble in `\hypersetup` and disable links and anchors completely. The new driver passes the options also to the `bookmark` package if `bookmark` hasn't been loaded yet as bookmarks can't work properly if the anchors from hyperref are missing.

`link` (*setup key*) The `draft` option is a global option that can't be undone (at least not easily). So the new driver offers also boolean keys `link`, `url`, `file`, `run` and `menu` which allow to locally disable a link type. So e.g. `\hypersetup{link=false}\ref{abc}` will give a reference without link (this is naturally also possible with `\ref*{abc}`). This disables also all hooks of the link type, so the link is for example no longer colored. It also removes the implicit grouping of the content.

`nested-links` (*setup key*)

Links are sometimes nested. E.g. if a section heading contains a reference it can lead to nested links in the table of contents or if `\nameref` is used. That is not forbidden and normally work as expected: If the link area overlap normally the inner link is "on top" and chosen at a click. But it is not always actually wanted, so with the `nested-links` (a boolean key) it is possible to disable such nested links.

11 Draftmode

pdftex and other engines knows a `draftmode` which can be set with `\pdfdraftmode=1` and hyperref honors this in some places. The new driver ignores it, for example `pagelabels` are created in any case. With today's computer power there is not much to gain and it only complicates the code.

This should not be confused with the `draft` and `final` package options! They are still honored.

12 Dropped options

A number of options are ignored by this driver

pdfversion The `pdfversion` should be set in `\DocumentMetadata`

setpagesize The key is ignored and the PDF page size is not set. Load `color` or `graphicx` or use a class which sets the PDF page size.

breaklinks The option does nothing sensible anyway (apart from triggering a warning). Currently with `latex+dvips` links can't be broken. But there is work in progress to change this.

unicode This is always true.

pdfa If this option is set to true hyperref normally checks and sets a small number of requirements for the PDF standard PDF/A. The key is ignored with this driver. Instead the wanted standard should be declared in `\DocumentMetadata`:

```
\DocumentMetadata{pdfstandard=A-2b}
```

Currently `A-1b`, `A-2b`, `A-3b` can be set. The support for various requirements is still incomplete, but the parts that `hyperref` checked are implemented:

- The `/F` key is added to links and `Print` is activated, `Hidden`, `Invisible`, `NoView` are deactivated.
- `/NeedAppearances` is suppressed
- `PushButtons`, which use the action `/S/JavaScript` are suppressed.
- `ResetButtons`, which use the action `/S/ResetForm` are suppressed.
- In widget annotations, the `/AA` dictionary is suppressed.

13 Destinations

Destinations (sometimes call anchors in the `hyperref` documentation) are the places a link jumped too. Unlike the name may suggest they don't described an exact location in the PDF. Instead a destination contains a reference to a page along with an instruction how to display this page. The normally used "`XYZ top left zoom`" for example instructs the viewer to show the page with the given *zoom* and the top left corner at the *top left* coordinates—which then gives the impression that there is an anchor at this position.

From these instructions two (`Fit` and `FitB`) don't take an argument. All others take one (`FitH`, `FitV`, `FitBH`, `FitBV`) or more (`XYZ`, `FitR`) arguments. These arguments are normally coordinates, `XYZ` takes also a zoom factor. The coordinates are absolute coordinates in `bp` relative to the lower left corner of the PDF.

With the primitive command `\pdfdest` of `pdftex` almost all instructions are created with a keyword only: The needed coordinate is calculated automatically from the location the `\pdfdest` command is issued. So to get a specific coordinate one has to move the command to the right place. E.g.

```
\AddToHookNext{shipout/background}  
  {\put(0,-\pdfpageheight+100bp){\pdfdest name{destA} FitH\relax}}
```

Exceptions are the `XYZ` instruction, where `pdftex` accepts a keyword `zoom` followed by a zoom factor, and the `FitR` instruction which understands the keywords `width`, `height` and `depth` followed by a dimension, which is then used to calculate a rectangle relative to the current location. If no keywords are given the dimensions are taken from the surrounding box—which can also lead to zero sized areas.

The manual of `hyperref` gives a bit the impression as if this coordinates can be set manually by the user but as described above this is mostly wrong: It is for normal destination only possible with a dvi-backend like `dvips` which make use of `pdfmark.def`. `pdftex` and `luatex` can use manual coordinates only for `pdfstartview` and `pdfremotestartview`. As `dvips` was the first driver of `hyperref` the option `pdfview` was at first developed for it and then adapted to `pdftex`. But this had the effect that the handling of the option `pdfview` is inconsequent across the backend and engines: For example with `pdfview=FitH 100` `pdftex` ignores the number and calculates its own, while `dvips` sets the coordinate to the absolute 100. The zoom factor of `XYZ` is not supported by the `pdftex` driver at all, and `FitR` only partially.

The generic driver consolidate this but tries to stay compatible with the other drivers as far as possible. It also takes into account that `pdfview` and `pdfstartview` and `pdfremotestartview` have different requirements: While for the first relative coordinates are fine, for the two others absolute coordinates are more sensible.

`pdfview` (*setup key*) So with this driver the options `pdfview`, `pdfstartview` and `pdfremotestartview`
`pdfstartview` (*setup key*) take the following options:
`pdfremotestartview` (*setup*
key)

- `Fit`, `FitB`, `FitH`, `FitV`, `FitBH`, `FitBV` which can be followed by a positive integer (separated by a space) or the keyword `null`. The number can be given as a *dimension expression* surrounded with `\hypercalcbp`. The driver redefines this command to use `\dim_to_decimal_in_bp:n`.
 - `pdfview` will ignore the integer and any other arguments and calculate the expected coordinates as described above for `pdftex` with all supported engines and backends.
 - `pdfstartview` and `pdfremotestartview` will pass the optional number or keyword after expansion as absolute coordinate. Missing numbers will be filled up with `null`.
- `XYZ`. This can be followed (separated by spaces) by up to three positive integers or keywords `null` which are then taken as *top left zoom* in this order. *zoom* is a factor, so e.g. 0.5 will give a scaling of 50%.
 - `pdfview` will use the last value as *zoom*, ignore all other values and calculate the expected coordinates as described above for `pdftex` with all supported engines and backends (this means it is possible to use `XYZ 2` to set a zoom of 200%, it is not necessary to fill in dummy values.)
 - `pdfstartview` and `pdfremotestartview` will pass the optional numbers or keyword after expansion as absolute coordinates and zoom. Missing numbers will be filled up with `null`.

This new behaviour is in part incompatible with previous handling with the `dvips` driver.

- `FitR`. If no argument (separated by spaces) follows then `pdfview` will use with `pdftex` and `luatex` the automatic calculation of the coordinates from the encompassing box. With `dvips` and `(x)dvipdfmx` it will fall back to `Fit`. `pdfstartview` and `pdfremotestartview` will fallback to `Fit` too.

If arguments (separated by spaces) follow they should be four numbers representing *left bottom right top*.

- `pdfview` will use the values to calculate coordinates relative to the current location. So `0 -100 200 400` will give a “box” of width 200bp, height 400bp and depth 100dp that the destination should encompass. Missing numbers will be set to 0. But one should be aware that it is quite unpredictable how viewers which support `FitR` handles zero sizes.
- `pdfstartview` and `pdfremotestartview` will pass the values as absolute coordinates.

13.1 Names of destinations

`hyperref` creates two types of destination names: For numbered structures (so when the anchor is set by `\refstepcounter`) it builds the name from the counter name and the `\theH...` representation: `<counter name>.\theH<counter name>`.

For unnumbered structures, e.g. starred chapters or anchors created with `\phantomsection` it uses names like `section*.<number>` and `chapter*.<number>`.

Typically the name of destination can be retrieved by setting a label, this works also with unnumbered sections. The anchor and also the page can be retrieve in an expandable way with the help of commands from the `refcount` package which is loaded by `hyperref`. For example with the following commands it is possible to use the label to create a bookmark:

```
\bookmark[dest=\getrefbykeydefault{label}{anchor}{Doc-Start}]{my bookmark}
\bookmark[dest=page.\getrefbykeydefault{label}{page}{Doc-Start}]{my bookmark}
```

If a `\HyperDestNameFilter` is defined, this must be added around the definition, so actually the full code has to look like this

```
\bookmark[dest=
\HyperDestNameFilter{\getrefbykeydefault{label}{anchor}{Doc-Start}}]{mysection}
```

To simplify this `hyperref` provides `\hyperget{anchor}{label}` and `\hyperget{pageanchor}{label}`

14 Assorted key descriptions

The following gives a few details to some keys that are perhaps not completely described in the manual, or are a bit different in this driver. The list is alphabetic.

bookmarkstype (*setup key*) This key takes as value the extension of a list like `toc` or `lof`. If this list uses `\addcontentsline` the content will be added to the bookmarks. The key can be use in `\hypersetup` and also in the middle of the document to switch the list.

bordercolormodel (*setup key*) With `bordercolormodel` the `colormodel` used in the `/C` key of the annotation array and in similar keys is set. It does not affect the text and graphics colors in the page stream. Possible choices are `rgb` (three numbers in the array) and `cmk` (four numbers). While the PDF reference allows four numbers, PDF readers don't necessarily handle this correctly, so the value can be wrong.

destlabel (*setup key*) This is a boolean key. Currently it must be set as package option. If set to true, the name of a destination is taken from a following `\label`, if there is one before the next destination command. This requires two compilations to get the correct coordinates in the destination. In the first compilation the alias name is recorded in the aux-file:

```
\hyper@newdestlabel{section.1.2}{sec:sec2}
```

The next compilation can then make use of it. The two-pass could be avoided in the future with a better labeling system, where the name if set earlier.

extension (*setup key*) This key sets an variable that has two purposes: It is used if file name has not extension, and it decides if the annotation is a URI or GoToR annotation. So

```
\hypersetup{extension=dvi}
\href{mwe1.pdf}{pdf}
\href{mwe2.dvi}{dvi}
\href{mwe3}{no ext}
```

will create

```
/Subtype/Link/A<</S/URI /URI(mwe1.pdf)>>
/Subtype/Link/A<</S/GoToR /F (mwe2.dvi)>>
/Subtype/Link/A<</S/GoToR /F (mwe3.dvi)>>
```

Typically PDF viewer can handle only GoToR annotations pointing to a PDF. So normally the default value `pdf` of this key should not be changed. This key is useless in PDF context. The boolean is only used in the code for anchors/destination where nesting doesn't make sense. It should not be changed.

`nesting` (*setup key*)

`pdfborder` (*setup key*) This key set accept as value three numbers or three numbers and an array describing

`linkborder` (*setup key*) a dash pattern, examples are `0 0 1` or `0 0 1 [3 2]`. The first two numbers should

`urlborder` (*setup key*) according to the reference set round corners, but PDF viewer seem to ignore it. The

`runborder` (*setup key*) third number is the line width of the border. Settings done with `pdfborderstyle` should

`menuborder` (*setup key*) take precedence.

`pdfborderstyle` (*setup key*) The value of this key is the content of the BS dictionary. As an example

`linkborderstyle` (*setup key*) `/Type/Border /W 1 /S/U /D[3 2]`

<code>urlborderstyle</code> (<i>setup key</i>)	Key	Values	comment / example
<code>fileborderstyle</code> (<i>setup key</i>)	<code>/Type</code>	<code>/Border</code>	optional
<code>runborderstyle</code> (<i>setup key</i>)	<code>/W</code>	<code><number></code>	Width of border line
<code>menuborderstyle</code> (<i>setup key</i>)	<code>/S</code>	<code>/S</code>	solid (default)
		<code>/D</code>	dash pattern can be set with <code>/D</code>
		<code>/B</code>	beveled
		<code>/I</code>	inset
		<code>/U</code>	underline
	<code>/D</code>	<code><array of numbers></code>	dash pattern (lines/gaps) (default [3])

`pdfcreationdate` (*setup key*) Setting these keys is normally not needed. If they are used the values of the first

`pdfmoddate` (*setup key*) two keys are stored directly in the Info dictionary for `/Creationdate` and `/ModDate`.

`pdfmetadate` (*setup key*) All three keys are used in XMP-metadata. The values are converted to strings but not processed further, so they should have the correct PDF format without the enclosing parentheses, e.g. `D:20200202111111+01'00'`.

`pdflinkmargin` (*setup key*) As described in the `hyperref` manual the behaviour differs between the backends: with `dvips` it is possible to change links locally, `pdflatex` and `lualatex` work by page, with `dvipdfmx` the setting is global (and has to be done in the preamble).

`pdflang` (*setup key*) The key will work, but it is recommended to the set the language in `\DocumentMetadata` instead.

File I

hyperref-generic driver implementation

```

1 <@@=hyp>
2 <*headertestphase>
3 \ProvidesFile{hgeneric-testphase.def}[2025-07-15 v0.96u %
4   generic Hyperref driver for the LaTeX PDF management bundle]
5 </headertestphase>
6 <*header>
7 \ProvidesFile{hgeneric.def}[2025-07-15 v0.96u %
8   generic Hyperref driver for the LaTeX PDF management bundle]
9 </header>
10 <*package>
11 \RequirePackage{etoolbox} %why?

```

Temporary command definition, can be remove when hyperref is update too.

```
12 \long\def\Hy@ReturnAfterFi#1\fi{\fi#1}
13 \ExplSyntaxOn
14 \file_input:n {hyperref-colorschemes.def}
15 \ExplSyntaxOff
```

1 messages

Redirect the message name:

```
16 \ExplSyntaxOn
17 \prop_gput:Nnn \g_msg_module_name_prop { hyp }{ hyperref }
```

At first a message for the testing of the resource management

```
18 \cs_if_exist:NTF \DocumentMetadata
19 {
20   \msg_new:nnnn
21     { hyp }
22     { missing-resource-management }
23     { The-PDF-resource-management-is-required-for-this-hyperref-driver! }
24     {
25       Activate-it-with \\
26       \tl_to_str:n{\DocumentMetadata{<options>}}\\
27       before-\tl_to_str:n{\documentclass}
28     }
29 }
30 {
31   \msg_new:nnnn
32     { hyp }
33     { missing-resource-management }
34     { The-PDF-resource-management-is-required-for-this-hyperref-driver! }
35     {
36       Activate-it-with \\
37       \tl_to_str:n{\DocumentMetadata{<options>}}\\
38       before-\tl_to_str:n{\documentclass} or \\
39       \RequirePackage{pdfmanagement}
40     }
41 }
```

The pdfversion should be set in \DocumentMetadata

```
42 \msg_new:nnnn
43 { hyp }
44 { pdfversion-disabled }
45 {
46   This-hyperref-driver-ignores-the-pdfversion-key!\\
47   Set-the-pdfversion-in-\token_to_str:N \DocumentMetadata
48 }
49 {
50   For example:\\
51   \tl_to_str:n
52   {
53     \DocumentMetadata { pdfversion=1.7 }
54   }
55 }
```

A generic message for ignored keys.

```
56 \msg_new:nnn
57 { hyp }
58 { key-dropped }
59 {
60   This-hyperref-driver-ignores-the-key~#1!\
61   Please-check-the-documentation.
62 }
```

pdf/A messages for fields, this will probably be moved to an external package

```
63 \msg_new:nnn
64 { hyp }
65 { pdfa-no-push-button }
66 { PDF/A:~Push-button-with-JavaScript-is-prohibited }
67
68 \msg_new:nnn
69 { hyp }
70 { pdfa-no-reset-button }
71 { PDF/A:~Reset-action-is-prohibited }
```

pdf/A message for not allowed Named actions

```
72 \msg_new:nnn
73 { hyp }
74 { pdfa-no-named-action }
75 { PDF/A:~Named-action-#1-is-prohibited }
```

A message if the destination name is empty.

```
76 \msg_new:nnn
77 { hyp }
78 { empty-destination-name }
79 {
80   Empty-destination-name,\
81   using~'#1'
82 }
```

A message if the destination check fails

```
83 \msg_new:nnn
84 { hyp }
85 { invalid-destination-value }
86 {
87   Invalid-value~'#1'~of~'#2' \
88   is-replaced-by-'Fit'~\msg_line_context:.
89 }
```

Some options or values should not be used in older pdf versions

```
90 \msg_new:nnn
91 { hyp }
92 { ignore-deprecated-or-unknown-option-in-pdf-version }
93 {
94   Option~'#1'~is-unknown-or-deprecated-in\
95   pdf~version~#2.~Ignored.
96 }
97 \msg_new:nnn
98 { hyp }
99 { ignore-deprecated-or-unknown-value-in-pdf-version }
100 {
```



```

101     Value~'#1'~is~unknown~or~deprecated~in\\
102     pdf~version~#2.~Ignored.
103   }
104   \msg_new:nnn
105   { hyp }
106   { replace-deprecated-or-unknown-value-in-pdf-version }
107   {
108     Value~'#1'~is~unknown~or~deprecated~in\\
109     pdf~version~#2. Value~'#3'~is used instead.
110   }

```

During development not all standard hyperref keys are known and the Hyp-handler needs to process some new keys unknown to him. This issues warnings for now:

```

111   \msg_new:nnn
112   { hyp }
113   { unknown-key }
114   {
115     unknown-key~#2~of~module~'#1'~set~to~'#3'.
116   }
117   \msg_new:nnn
118   { hyp }
119   { unknown-key-to-Hyp }
120   {
121     ignored~in~family~Hyp~unknown-key~#1.
122   }

```

There are a lot choice keys. This defines messages which shows the valid choices if a faulty one has been used:

```

123   \cs_new:Npn \__hyp_clist_display:n #1 {*~#1\\}
124   \msg_new:nnn
125   { hyp }
126   { unknown-choice }
127   {
128     Value~'#3'~is~invalid~for~key~'#1'.\\
129     The~key~accepts~only~the~choices\\
130     \clist_map_function:nN { #2 }\__hyp_clist_display:n
131   }
132
133   \msg_new:nnn
134   { hyp }
135   { unknown-choice+empty }
136   {
137     Value~'#3'~is~invalid~for~key~'#1'.\\
138     The~key~accepts~only~the~choices\\
139     \clist_map_function:nN { #2 }\__hyp_clist_display:n
140     An~empty~value~removes~the~setting.
141   }
142
143   \msg_new:nnn
144   { hyp }
145   { no-bool }
146   {
147     Value~'#2'~is~invalid~for~key~'#1'.\\
148     The~key~accepts~only~the~choices\\
149     *~true\\

```

```

150   *~false \\
151   *~and~an~empty~value~which~removes~the~setting.\\
152   No~value~is~equivalent~to~using~'true'.
153 }

```

A message for creator and producer which can't be removed.

```

154 \msg_new:nnn
155 { hyp }
156 { empty-info-value }
157 {
158   Empty-value-for-key-#1.\\
159   This-isn't-honored-by-all-backends.
160 }

```

2 Variants

```

161 \cs_generate_variant:Nn\pdf_destination:nn {nf}
162 \cs_generate_variant:Nn\pdf_object_ref:n {e}
163 \cs_generate_variant:Nn\pdf_pageobject_ref:n {e}

```

3 Overwriting/providing commands from hyperref

hyperref checks driver version, we need to suppress this during the development

```

164 \chardef\Hy@VersionChecked=1 %don't check the version!
165 %\cs_set_protected:Npn \PDF@SetupDoc{}
166 %\PDF@FinishDoc{}% dummy needed for hyperref ...

```

\hypercalcbp We define a better (expandable) version of \hypercalcbp

\hypercalcbp

```

167 \cs_set_eq:NN \hypercalcbp \dim_to_decimal_in_bp:n

```

(End of definition for \hypercalcbp. This function is documented on page 18.)

This command must be provided for now, but they are unused by the driver:

```

168 \providecommand\@pdfborder{}
169 \providecommand\@pdfborderstyle{}
170 \newcommand\OBJ@OCG@view {} % needed in hyperref
171 \def\Hy@numberline#1{#1\c_space_tl} %needed by bookmark

```

The pdfversion should be set in \DocumentMetadata but we must copy it to the hyperref command:

```

172 \cs_set_eq:NN \Hy@pdfminorversion \pdf_version_minor:
173 \cs_set_eq:NN \Hy@pdfmajorversion \pdf_version_major:
174 \legacy_if:nT { Hy@setpdfversion }
175 {
176   \msg_warning:nn { hyp }{ pdfversion-disabled }
177 }
178 \Hy@DisableOption{pdfversion}

```

`\Acrobatmenu` should use the new internal link command

```

179 \RenewDocumentCommand \Acrobatmenu { m m }
180 {
181   \hyper@linknamed {#1} {#2}
182 }

```

`\hypersetup` should set the new keys. We can't also execute `\kvsetkeys{Hyp}` as this errors for example with colors. This means the driver has to provide new code for every key!

```

183 % TODO should go at some time ...
184 % \kv@set@family@handler{Hyp}
185 % { \msg_warning:nne {hyp}{unknown-key-to-Hyp}{#1} }
186 \cs_set_protected:Npn \hypersetup #1
187 {
188   \kvsetkeys{Hyp} {#1}
189   \keys_set:nn { hyp }{ #1 }
190 }
191 % TODO for now unknown keys should only give warnings.
192 \keys_define:nn { hyp }
193 {
194   unknown .code:n =
195   {
196     \msg_warning:nneee { hyp } { unknown-key }
197     { hyp }{ \l_keys_key_str } { #1 }
198   }
199 }

```

Hyperref creates a number of destinations automatically. E.g. in unnumbered chapters and sections and with `\phantomsection`. The following key allows to force a specific name for the destination so that it can be used by bookmarks.

```

200 \keys_define:nn { hyp }
201 {
202   next-anchor .code:n =
203   {
204     \AddToHookNext{__hyp/dest/make}
205     {\Hy@MakeCurrentHref{#1}}
206   }
207 }

```

Allow non-ascii in href, and add more href versions. We add a few new keys: `urlencode` to force percent encoding (`\hrefurl`, `\href`) `protocol` to add a protocol (`\hrefurl`, `\href` doesn't work here as it needs the colon for the split and the guessing.) `destination` to add a destination (`\hrefpdf`)

```

208
209 \bool_new:N \l__hyp_href_url_encode_bool
210 \bool_new:N \l__hyp_href_url_ismap_bool
211 \tl_new:N \l__hyp_href_url_protocol_tl
212 \tl_new:N \l__hyp_href_pdf_destination_tl
213 \tl_new:N \l__hyp_href_pdf_page_tl
214 \tl_new:N \l__hyp_href_run_parameter_tl
215 \cs_new_protected:Npn \__hyp_href_url_format: {\begingroup\Url}
216
217
218 \keys_define:nn { hyp / href }

```

```

219 {
220   ,urlencode .bool_set:N = \l__hyp_href_url_encode_bool
221   ,format .code:n = { \cs_set:Nn \__hyp_href_url_format: {#1} },
222   ,protocol .tl_set:N = \l__hyp_href_url_protocol_tl
223   ,destination .tl_set:N = \l__hyp_href_pdf_destination_tl
224   ,pdfremotestartview .code:n =
225     {
226       \keys_set:nn { hyp }
227       { pdfremotestartview = #1 }
228     }
229   ,page .code:n =
230     {
231       \tl_set:Nn \l__hyp_href_pdf_page_tl {#1}
232       \tl_set:Nn \Hy@href@page {#1}
233     }
234   ,ismap .bool_set:N = \l__hyp_href_url_ismap_bool
235   ,run-parameter .tl_set:N = \l__hyp_href_run_parameter_tl
236   ,nextactionraw .code:n =
237     { %perhaps some safety match later, see hyperref code
238       \tl_if_empty:nTF {#1}
239         {
240           \pdfdict_remove:nn{l_hyp/annot/A}{Next}
241         }
242         {
243           \pdfdict_put:nnn{l_hyp/annot/A}{Next}{#1}
244           \tl_set:Nn \Hy@href@nextactionraw {/Next-#1}
245           \keys_set:nn {hyp }{ pdfnewwindow = true}
246         }
247     }
248   ,afrelationship .code:n =
249     {
250       \pdfdict_put:nne
251       { l_pdffile/Filespec}{AFRelationship}{ \pdf_name_from_unicode_e:n {#1}}
252     }
253 }
254 }
255
256 \keys_define:nn { hyp }
257 {
258   ,href / urlencode .bool_set:N = \l__hyp_href_url_encode_bool
259   ,href / urlencode .default:n = {true}
260   ,href / urlencode .initial:n = {false}
261   ,href / protocol .tl_set:N = \l__hyp_href_url_protocol_tl
262   ,href / destination .tl_set:N = \l__hyp_href_pdf_destination_tl
263   ,href / format .code:n = { \cs_set:Nn \__hyp_href_url_format: {#1} }
264 }
265
266 \hook_new_pair:nn{cmd/href/before}{cmd/href/after}
267
268 \DeclareRobustCommand*{\href}[1][ ]{%
269   \mode_leave_vertical:
270   \hook_use:n{cmd/href/before}
271   \group_begin:
272   \keys_set:nn { hyp / href } {#1}

```

```

273 \bool_if:NTF \l__hyp_href_url_encode_bool
274 {
275   \tl_set:Nn \l__hyp_text_enc_uri_print_tl {utf8/URI}
276 }
277 {
278   \tl_set:Nn \l__hyp_text_enc_uri_print_tl {utf8/string}
279 }
280 \@ifnextchar\bgroup\Hy@href{\hyper@normalise\href@}%
281 }
282
283 \begingroup
284 \catcode`\$=6 %
285 \catcode`\#=12 %
286 \gdef\href@${1}{\expandafter\href@split$1##\}%
287 \gdef\href@split$1#$2#$3\\$4{%
288   \hyper@@link{$1}{$2}{$4}%<---__hyp-docstrip doubling!
289   \endgroup
290   \hook_use:n{cmd/href/after}
291 }%
292 \endgroup
293
294 \hook_new_pair:nn{cmd/hrefurl/before}{cmd/hrefurl/after}
295
296 \DeclareRobustCommand*{\hrefurl}[1] []
297 {
298   \mode_leave_vertical:
299   \hook_use:n{cmd/href/before}
300   \group_begin:
301   \keys_set:nn { hyp / href } {#1}
302   \bool_if:NTF \l__hyp_href_url_encode_bool
303   {
304     \tl_set:Nn \l__hyp_text_enc_uri_print_tl {utf8/URI}
305   }
306   {
307     \tl_set:Nn \l__hyp_text_enc_uri_print_tl {utf8/string}
308   }
309   \hyper@normalise\__hyp_href_url_aux:nn}
310
311 \cs_new_protected:Npn \__hyp_href_url_aux:nn #1 #2
312 {
313   \exp_args:Nno\hyper@linkurl{#2}{\l__hyp_href_url_protocol_tl#1}
314   \group_end:
315   \hook_use:n{cmd/href/after}
316 }
317
318 \hook_new_pair:nn{cmd/hrefpdf/before}{cmd/hrefpdf/after}
319 \DeclareRobustCommand*{\hrefpdf}[1] []
320 {
321   \mode_leave_vertical:
322   \hook_use:n{cmd/hrefpdf/before}
323   \group_begin:
324   \keys_set:nn { hyp / href } {#1}
325   \hyper@normalise\__hyp_href_pdf_aux:nn
326 }

```

```

327
328 \cs_new_protected:Npn \__hyp_href_pdf_aux:nn #1 #2
329 {
330   \exp_args:Nno\hyper@linkfile{#2}{#1}{\l__hyp_href_pdf_destination_tl}
331   \group_end:
332   \hook_use:n{cmd/hrefpdf/after}
333 }
334
335 \hook_new_pair:nn{cmd/hrefrun/before}{cmd/hrefrun/after}
336 \DeclareRobustCommand*{\hrefrun}[1] []
337 {
338   \mode_leave_vertical:
339   \hook_use:n{cmd/hrefrun/before}
340   \group_begin:
341   \keys_set:nn { hyp / href } {#1}
342   \hyper@normalise\__hyp_href_run_aux:nn
343 }
344
345 \cs_new_protected:Npn \__hyp_href_run_aux:nn #1 #2
346 {
347   \exp_args:Nno\hyper@linklaunch{#1}{#2}{\l__hyp_href_run_parameter_tl}
348   \group_end:
349   \hook_use:n{cmd/hrefrun/after}
350 }
351
352
353 \hook_new_pair:nn{cmd/url/before}{cmd/url/after}
354
355 \DeclareRobustCommand*{\url}[1] []
356 {
357   \mode_leave_vertical:
358   \hook_use:n{cmd/url/before}
359   \group_begin:
360   \keys_set:nn { hyp / href } {#1}
361   \bool_if:NTF \l__hyp_href_url_encode_bool
362   {
363     \tl_set:Nn \l__hyp_text_enc_uri_print_tl {utf8/URI}
364   }
365   {
366     \tl_set:Nn \l__hyp_text_enc_uri_print_tl {utf8/string}
367   }
368   \hyper@normalise\__hyp_href_url_aux:n
369 }
370
371 \cs_new_protected:Npn \__hyp_href_url_aux:n #1
372 {
373   \exp_args:Nno
374   \hyper@linkurl{\__hyp_href_url_format: {#1}}
375   {\l__hyp_href_url_protocol_tl#1}
376   \group_end:
377   \hook_use:n{cmd/url/after}
378 }
379

```

the `\urldef` command doesn't like the optional argument, so we overwrite locally the

`\url` command here:

```
380
381 \def\urldef#1#2{\begingroup\def\url{\hyper@normalise\url@}\setbox\z@\hbox\bgroup
382 \def\Url@HyperHook##1\endgroup{\Url@def{#1}{#2}}%
383 % Because hyperref breaks \urldef and does not define its own (Grrrr!)...
384 \def\url@##1{\egroup\endgroup\DeclareRobustCommand#1{#2{##1}}}%
385 #2}
386
```

make the new commands compatible with `\pdfstringdef`:

```
387 \NewExpandableDocumentCommand\__hyp_secondoftwowithopt:wnn {omm}{#3}
388 \pdfstringdefDisableCommands{\let\hrefurl\__hyp_secondoftwowithopt:wnn}
389 \pdfstringdefDisableCommands{\let\hrefpdf\__hyp_secondoftwowithopt:wnn}
390 \pdfstringdefDisableCommands{\let\hrefrun\__hyp_secondoftwowithopt:wnn}
```

4 Compatibility commands

4.1 Metadata

A number of values should be accessible from other packages. Until now packages like `hyperxmp` used variables like `\pdfauthor`. As they are gone we need to provide some other access.

```
391 \cs_new_protected:Npn \__hyp_store_metadata:nn #1 #2 %#1 key, #2 value.
392 {
393   %\tl_set:cn {#1}{#2}
394   \AddToDocumentProperties[hyperref]{#1}{#2}
395 }
396 \cs_generate_variant:Nn \__hyp_store_metadata:nn {en,ne,ee,no,eo}
```

4.2 citecolor

`cite` is a link context. So we define a hook, and the keys in terms of this hook.

```
397 \hook_new:n{hyp/link/cite}
398 %\color_set:nnn {hyp/color/cite}{HTML}{2E7E2A}
399 %\color_set:nn {hyp/color/citeborder}{hyp/color/cite!60!white}
400 \keys_define:nn { hyp }
401 {
402   ,citecolor .code:n = {\__hyp_color_set:ne {hyp/color/cite}{#1}\__hyp_citecolor_hook_init
403   ,citebordercolor
404   .code:n = {\__hyp_color_set:ne {hyp/color/citeborder}{#1}\__hyp_citebordercolor_hook_i
405 }
406 \cs_new_protected:Npn \__hyp_citecolor_hook_init:
407 {
408   \hook_gput_code:nnn { hyp/link/cite }{hyp/cite}
409   {
410     \keys_set:nn { hyp }
411     {
412       linkcolor      = hyp/color/cite
413     }
414   }
415 \cs_gset_eq:NN \__hyp_citecolor_hook_init: \prg_do_nothing:
416 }
```

```

417 \cs_new_protected:Npn \__hyp_citebordercolor_hook_init:
418 {
419   \hook_gput_code:nnn { hyp/link/cite }{hyp/citeborder}
420   {
421     \keys_set:nn { hyp }
422     {
423       linkbordercolor = hyp/color/citeborder
424     }
425   }
426 \cs_gset_eq:NN \__hyp_citebordercolor_hook_init: \prg_do_nothing:
427 }
428

```

5 Checks

The driver can not work properly if the pdfmanagement is not active, as keys need to write to the catalog and to info. But annotations and outlines should work. So should this be a fatal error? Should there be a difference between missing and inactive management? TODO

```

429 \bool_lazy_and:nnF
430 { \cs_if_exist_p:N \pdfmanagement_if_active_p: }{ \pdfmanagement_if_active_p: }
431 { \msg_error:nn { hyp}{ missing-resource-management } }

```

Outlines/bookmarks require the bookmark package. TODO check pdfpagemode if bookmarks are suppressed. TODO We overwrite the color key here for now, but this should be moved to bookmark

```

432 \AddToHook { package/bookmark/after}
433 {
434   \define@key{BKM}{color}
435   {
436     \tl_if_blank:nTF {#1}
437     { \cs_set_eq:NN\BKM@color\@empty }
438     {
439       \__hyp_color_set:ne {__hyp/tmpa}{#1}
440       \color_export:nVN
441         {__hyp/tmpa}
442         \g__hyp_bordercolormodel_str
443         \BKM@color
444     }
445   }
446 }
447 \legacy_if:nTF { Hy@bookmarks }
448 {
449   \AddToHook{begindocument/before}[hyperref/bookmark]
450   {
451     \RequirePackage{bookmark}
452   }
453 }

```

empty hook chunk to ensure that the chunk exists.

```

454 {
455   \AddToHook{begindocument/before}[hyperref/bookmark]{}
456 }

```



```

457 \legacy_if:nT {Hy@draft}
458   {
459     \PassOptionsToPackage{draft}{bookmark}
460   }

```

6 Reference and label commands

This uses the in-built property module.

```
\__hyp_property_record:nn
```

```

461 %
A label command which adds the space commands from LaTeX:
462 \cs_new_protected:Npn \__hyp_property_record:nn #1 #2 %label/attributes
463   {
464     \@bsphack
465     \property_record:nn{#1}{#2}
466     \@esphack
467   }

```

we generate a few variants. We use ee-variants as they already exist in the module and once this is there it can go here.

```
468 \cs_generate_variant:Nn \__hyp_property_record:nn {ee}
```

(End of definition for __hyp_property_record:nn.)

7 Variables

7.1 Private temporary variables

At first a few generic tmp variables

```

\l__hyp_tmpa_tl
\l__hyp_tmpb_tl
469 \box_new:N \l__hyp_tmpa_box
470 \tl_new:N \l__hyp_tmpa_tl
471 \tl_new:N \l__hyp_tmpb_tl
472 \seq_new:N \l__hyp_tmpa_seq
473 \int_new:N \l__hyp_tmpa_int
474 \str_new:N \l__hyp_tmpa_str

```

(End of definition for \l__hyp_tmpa_tl and others.)

A number of more specific tmp variables. These will perhaps disappear or change.

```

\l__hyp_dest_name_tmpa_tl
\l__hyp_uri_tmpa_tl
475 \tl_new:N \l__hyp_dest_name_tmpa_tl
\l__hyp_filename_tmpa_tl
476 \tl_new:N \l__hyp_uri_tmpa_tl
__hyp_text_tmpa_str \g__hyp_text_tmpa_str
477 \tl_new:N \l__hyp_filename_tmpa_tl
478 \tl_new:N \l__hyp_para_tmpa_tl
479 \str_new:N \l__hyp_text_tmpa_str
480 \str_new:N \g__hyp_text_tmpa_str

```

(End of definition for \l__hyp_dest_name_tmpa_tl and others.)

7.2 Constants

`\c__hyp_dest_undefined_tl` This variable is used if a destination name is empty.

```
481 \tl_const:Nn \c__hyp_dest_undefined_tl {UNDEFINED}
```

(End of definition for `\c__hyp_dest_undefined_tl`.)

`\c__hyp_annot_types_seq` This constants holds the link types managed by hyperref along with a mapping from annot names to hyperref names and back.

`\c__hyp_map_annot_hyp_prop`
`\c__hyp_map_hyp_annot_prop`

```
482 \seq_const_from_clist:Nn \c__hyp_annot_types_seq
483 {url,link,file,menu,run}
484 \prop_const_from_keyval:Nn \c__hyp_map_annot_hyp_prop
485 {
486   URI    = url,
487   GoTo   = link,
488   GoToR  = file,
489   Named  = menu,
490   Launch = run
491 }
492 \prop_const_from_keyval:Nn \c__hyp_map_hyp_annot_prop
493 {
494   url    = URI,
495   link   = GoTo,
496   file   = GoToR,
497   menu   = Named,
498   run    = Launch
499 }
500
```

(End of definition for `\c__hyp_annot_types_seq`, `\c__hyp_map_annot_hyp_prop`, and `\c__hyp_map_hyp_annot_prop`.)

7.3 Variables

`\g__hyp_dest_pdfstartpage_tl` The first holds the (absolute) start page number, the other the startview instruction for the current and remote files. The instruction is in “PDF format” but without the leading slash!

`\g__hyp_dest_pdfstartview_tl`
`\l__hyp_dest_pdfremotestartview_tl`

```
501 \tl_new:N \g__hyp_dest_pdfstartpage_tl
502 \tl_new:N \g__hyp_dest_pdfstartview_tl
503 \tl_new:N \l__hyp_dest_pdfremotestartview_tl
```

(End of definition for `\g__hyp_dest_pdfstartpage_tl`, `\g__hyp_dest_pdfstartview_tl`, and `\l__hyp_dest_pdfremotestartview_tl`.)

It is still unclear which str convert option is the best in the various places, so we use a variable to allow tests and perhaps external configuration. The “print” type should always have the delimiters.

`\l__hyp_text_enc_uri_print_tl`
`\l__hyp_text_enc_info_print_tl`
`\l__hyp_text_enc_dest_tl`
`\l__hyp_text_enc_dest_print_tl`
`\l__hyp_text_enc_file_print_tl`
`\l__hyp_text_enc_para_print_tl`

```
504 \tl_new:N \l__hyp_text_enc_uri_print_tl
505 \tl_new:N \l__hyp_text_enc_info_print_tl
506 \tl_new:N \l__hyp_text_enc_dest_tl
507 \tl_new:N \l__hyp_text_enc_dest_print_tl
508 \tl_new:N \l__hyp_text_enc_file_print_tl
509 \tl_new:N \l__hyp_text_enc_para_print_tl
```

```

510
511 \tl_set:Nn \l__hyp_text_enc_uri_print_tl {utf8/URI}
512 \tl_set:Nn \l__hyp_text_enc_info_print_tl {utf16/hex}
513 \tl_set:Nn \l__hyp_text_enc_dest_tl {utf8/string-raw}
514 \tl_set:Nn \l__hyp_text_enc_dest_print_tl {utf8/string}
515 \tl_set:Nn \l__hyp_text_enc_file_print_tl {utf8/string}
516 \tl_set:Nn \l__hyp_text_enc_para_print_tl {utf8/string}

```

(End of definition for \l__hyp_text_enc_uri_print_tl and others.)

It is also unclear how the /Contents entry would look at best. So we use sockets. The first argument is the target (url or destination), For GoTo we also pass the text as argument. The sockets should put something into the relevant annotation dictionaries.

```

517 \tl_new:N\l__hyp_link_Contents_tl
518 \socket_new:nn {hyp/link/GoTo/Contents}{2}
519 \socket_new:nn {hyp/link/URI/Contents}{1}
520 \socket_new:nn {hyp/link/GoToR/Contents}{1}
521 \socket_new_plug:nnn {hyp/link/GoTo/Contents}{default}
522 {
523   \__hyp_text_pdfstring:eoN
524   { Go-to-destination~#1 }
525   { \l__hyp_text_enc_info_print_tl }
526   \l__hyp_link_Contents_tl
527   \pdfannot_dict_put:nne {link/GoTo}{Contents}
528   {\l__hyp_link_Contents_tl}
529 }
530 \socket_new_plug:nnn {hyp/link/GoToR/Contents}{default}
531 {
532   \__hyp_text_pdfstring:eoN
533   { Open~file~#1 }
534   { \l__hyp_text_enc_info_print_tl }
535   \l__hyp_link_Contents_tl
536   \pdfannot_dict_put:nne {link/GoToR}{Contents}
537   {\l__hyp_link_Contents_tl}
538 }
539 \socket_new_plug:nnn {hyp/link/URI/Contents}{default}
540 {
541   \__hyp_text_pdfstring:eoN
542   { #1 }
543   { \l__hyp_text_enc_info_print_tl }
544   \l__hyp_link_Contents_tl
545   \pdfannot_dict_put:nne {link/URI}{Contents}
546   {\l__hyp_link_Contents_tl}
547 }
548 \socket_assign_plug:nn{hyp/link/GoTo/Contents}{default}
549 \socket_assign_plug:nn{hyp/link/GoToR/Contents}{default}
550 \socket_assign_plug:nn{hyp/link/URI/Contents}{default}

```

\l__hyp_dest_pdfview_tl This hold the destination instructions in a format suitable for \pdf_destination:nn. The special value fitrbox indicates a boxed destination.

```

551 \tl_new:N \l__hyp_dest_pdfview_tl

```

(End of definition for \l__hyp_dest_pdfview_tl.)

hyp/annot/link (color name) These color names are used for the annotations (colorlinks). They are initialized at the
 hyp/annot/url (color name) end when the color scheme is used
 hyp/annot/file (color name)
 hyp/annot/run (color name)
 hyp/annot/menu (color name)

`\g_hyp_bordercolormodel_str` This holds the export model for border color etc. It is currently either `space-sep-cmyk` or `space-sep-rgb`. The default is the second. It can be change by the key `bordercolormodel`

```
552 \str_new:N \g_hyp_bordercolormodel_str
```

(End of definition for `\g_hyp_bordercolormodel_str`.)

7.4 Booleans

`\l_hyp_annot_colorlink_bool` `\l_hyp_annot_colorurl_bool` `\l_hyp_annot_colorfile_bool` `\l_hyp_annot_colorrunk_bool` `\l_hyp_annot_colormenu_bool` These booleans are needed to control the colors. They are public so that other packages can query the state too.

```
553 \seq_map_inline:Nn \c_hyp_annot_types_seq
554 {
555   \bool_new:c {l_hyp_annot_color#1_bool}
556 }
```

(End of definition for `\l_hyp_annot_colorlink_bool` and others. These variables are documented on page 7.)

`\l_hyp_annot_ocgcolorlink_bool` `\l_hyp_annot_ocgcolorurl_bool` `\l_hyp_annot_ocgcolorfile_bool` `\l_hyp_annot_ocgcolorrunk_bool` `\l_hyp_annot_ocgcolormenu_bool` These booleans are needed to control the ocgcolors. They are public so that other packages can query the state too.

```
557 \seq_map_inline:Nn \c_hyp_annot_types_seq
558 {
559   \bool_new:c {l_hyp_annot_ocgcolor#1_bool}
560 }
```

(End of definition for `\l_hyp_annot_ocgcolorlink_bool` and others. These variables are documented on page 7.)

`\not_Named_bool` `\l_hyp_annot_Launch_bool` This booleans are used to disable some link types while keeping others.

```
561 \seq_map_inline:Nn \c_pdfannot_link_types_seq
562 {
563   \bool_new:c {l__hyp_annot_#1_bool}
564   \bool_set_true:c {l__hyp_annot_#1_bool}
565 }
```

(End of definition for `\l_hyp_annot_GoTo_bool` `\l_hyp_annot_URI_bool` `\l_hyp_annot_GoToR_bool` `\l_hyp_annot_Named_bool` `\l_hyp_annot_Launch_bool`.)

7.5 Boxes

`\l__hyp_dest_box` This holds an (empty) box which is used to get the width for FitR destinations.

```
566 \box_new:N \l__hyp_dest_box
```

(End of definition for `\l__hyp_dest_box`.)

7.6 Regex

`\c__hyp_dest_startview_regex` This regex is used to extract the right arguments pdfstartview and pdfremotestartview. Their values is filled up with null and then the start extracted.

```
567 \regex_const:Nn \c__hyp_dest_startview_regex
568 {
569   \A\ *
570   (?
571     (? :XYZ (? :\ +(?: (? :\d+|\d*\.\d+) |null)) {3}\ )
572     |
573     (? :Fit\b|FitB\b)
574     |
575     (? :(? :FitH|FitV|FitBH|FitBV) (? :\ +(?: \d+|\d*\.\d+) |\ +null) {1})
576     |
577     (? :FitR (? :\ +\d+|\ +\d*\.\d+) {4}\ )
578   )
579 }
```

(End of definition for \c__hyp_dest_startview_regex.)

7.7 PDF dictionaries

`1__hyp_page/Trans` This dictionary is used for page transitions.

```
580 \pdfdict_new:n {1__hyp_page/Trans}
581 \pdfdict_put:nnn {1__hyp_page/Trans}{Type}{/Trans}
```

(End of definition for 1__hyp_page/Trans.)

8 PDF string conversion

This defines a command which is used to replace `\pdfstringdef`. This is probably temporary and will be adjusted or replaced if some more generic PDF string command/module exists. All commands here use the “submodule” name `text`. At first a hook for user additions:

`hyp/text/pdfstring`

```
582 \hook_new:n {hyp/text/pdfstring}
```

(End of definition for hyp/text/pdfstring.)

The first step to convert input in a PDF string is to purify it, that means to remove/expand commands. As the whole process is not expandable anyway we can use a protected command. The “output” is a string:

`__hyp_text_purify:nN`

```
583 \cs_new_protected:Npn \__hyp_text_purify:nN #1 #2 %#1 input, #2 str command
584 {
585   \str_set:Ne #2 {\text_purify:n { #1 } }
586 }
```

(End of definition for __hyp_text_purify:nN.)

The second step is to cleanup the output of the first step. This is a dummy currently. The argument should be a string variable.

`_hyp_text_cleanup:N`

```
587 \cs_new_protected:Npn \_hyp_text_cleanup:N #1
588 {
589
590 }
```

(End of definition for _hyp_text_cleanup:N.)

The last step converts the string to a PDF encoding. As we have at least two targets (hex and literal) there is an argument. The conversion assumes utf8 input, it is based on `cspdf_string_from_unicode:nnN` in `l3pdfutils`.

#2 is str variable, #1 should be one of

<code>utf8/string</code>	<code>(lit) (utf8/string)</code>
<code>utf8/string-raw</code>	<code>lit (utf8/string)</code>
<code>utf8/URI</code>	<code>(percent encoded url)</code>
<code>utf8/URI-raw</code>	<code>percent encoded url</code>
<code>utf16/hex</code>	<code><HEX> (utf16/hex)</code>
<code>utf16/hex-raw</code>	<code>HEX (utf16/hex)</code>
<code>utf16/string</code>	<code>(lit) (utf16/string)</code>
<code>utf16/string-raw</code>	<code>lit (utf16/string)</code>

`_hyp_text_string_from_unicode:nN`

```
591 \cs_new_protected:Npn \_hyp_text_string_from_unicode:nN #1 #2
592 {
593   \pdf_string_from_unicode:nVN { #1 } #2 #2
594 }
```

(End of definition for _hyp_text_string_from_unicode:nN.)

This command combines everything. #1=input, #2= handler shortcut #3= output str variable The command uses a group to locally set `\Hy@pdfstringtrue` so that `\texorpdfstring` works and other local settings can be done.

`_hyp_text_pdfstring:nnN`

```
595 \cs_new_protected:Npn \_hyp_text_pdfstring:nnN #1 #2 #3
596 {
597   \group_begin:
598   \Hy@pdfstringtrue
599   \hook_use:n {hyp/text/pdfstring}
600   \_hyp_text_purify:nN { #1 } \l__hyp_text_tmpa_str
601   \_hyp_text_cleanup:N      \l__hyp_text_tmpa_str
602   \_hyp_text_string_from_unicode:nN { #2 } \l__hyp_text_tmpa_str
603   \str_gset_eq:NN \g__hyp_text_tmpa_str\l__hyp_text_tmpa_str
604   \group_end:
605   \str_set_eq:NN #3 \g__hyp_text_tmpa_str
606 }
607 \cs_generate_variant:Nn \_hyp_text_pdfstring:nnN {enN,onN,eoN,ooN,noN}
```

(End of definition for _hyp_text_pdfstring:nnN.)

!!! temporary until all instances are gone

```
608 \cs_new_protected:Npn \Hy@pstringdef #1 #2
609 { \_hyp_text_pdfstring:enN {#2} {utf8/string-raw}#1 }
```

This is a special version for info keys:

```
\_hyp_text_pdfstring_info:nN
```

```
610 \cs_new_protected:Npn \_hyp_text_pdfstring_info:nN #1 #2
611 {
612   \_hyp_text_pdfstring:non { #1 }{\ \l__hyp_text_enc_info_print_tl } #2
613 }
614 \cs_generate_variant:Nn \_hyp_text_pdfstring_info:nN {eN,oN}
```

(End of definition for _hyp_text_pdfstring_info:nN.)

9 Pagelabels

Page labels are representations of the page numbers in the PDF viewer. If the hyperref options `pdfpagelabels` is true (the default) roman numbers are e.g. shown as “ii (2/58)”. To do this the page ranges must be collected, if possible a prefix and the numbering of the counter must be identified and then written to the catalog.

The current implementation in hyperref/hyperref drivers:

xetex: hxdetex.def, line 80-110

\HyPL@StorePageLabel writes to the aux-file at begin document (after reading the aux) \HyPL@SetPageLabels is called (defined in hyperref.sty after the driver loading) which calls \Hy@PutCatalog{/PageLabels<</Nums[\HyPL@Labels]>>}

dvips: identical to xetex, line 60 to 90 in pdfmark.def

dvipdfm: identical to xetex

pdftex: \HyPL@StorePageLabel stores in \HyPL@Labels in the first compilation In \AtVeryEndDocument \HyPL@SetPageLabels is called.

luatex identical to pdftex

The code in hyperref inspects \thepage and tries to figure out the numbering system and the prefix. E.g. A-31 is correctly split. If the counter can not be identified hyperref generates only /P entries with the whole content.

The new implementation makes use of the pdf management: The relevant entry in the catalog is continuously updated and pushed out at the end of the document. This works (hopefully ...) with all drivers.

We do not try to avoid the (in hyperref’s wording) “useless” pagelabel entry /PageLabels <</Nums[0<</S/D>>]>> (but it would be possible), we also don’t test for empty \thepage, hyperref seems to handle this fine and the pdf is valid.

The code has to define \Hy@PutCatalog as we can’t yet change code in hyperref. The switch for draftmode has been removed.

```
\_hyp_PageLabels_gpush:
```

```
\Hy@PutCatalog
\HyPL@StorePageLabel
```

```
615 \cs_new_protected:Npn \_hyp_PageLabels_gpush:
616 {
617   \pdfmanagement_add:nne {Catalog} {PageLabels}{<</Nums[\HyPL@Labels]>>}
618 }
619
620 \def\Hy@PutCatalog #1 {}
621
622
623 \legacy_if:nT { Hy@pdfpagelabels }
```

```

624 {
625   \cs_set_protected:Npn \HyPL@StorePageLabel #1
626     {
627       \tl_gput_right:Nc \HyPL@Labels { \the\Hy@abspage<<#1>> }
628       \__hyp_PageLabels_gpush:
629     }
630 }

```

(End of definition for `__hyp_PageLabels_gpush:`, `\Hy@PutCatalog`, and `\HyPL@StorePageLabel`.)

10 Core Hyperref Commands

Every hyperref has to define eight core command:

```

\hyper@anchor
\hyper@anchorstart
\hyper@anchorend
\hyper@link      %GoTo
\hyper@linkstart %GoTo
\hyper@linkend   %GoTo
\hyper@linkfile  %GoToR
\hyper@linkurl   %URI

```

This driver defines for consistency also `\hyper@linklaunch` for Launch and `\hyper@linknamed` for Named.

10.1 Link level

Links can be nested. Inner links need perhaps special handling, e.g. to deactivate the link, or to change the border, or in the case of tagging to add some additional structure to handle the parent-child rules. We therefore add a global counter which is increased at the begin of link and decreased at the end.

`g__hyp_linknestlevel_int`

```

631 \int_new:N \g__hyp_linknestlevel_int

```

(End of definition for `g__hyp_linknestlevel_int`.)

```

632 \prg_new_conditional:Npnn \__hyp_if_outer_link: {TF}
633 {
634   \int_compare:nNnTF { \g__hyp_linknestlevel_int } > {1}
635     { \prg_return_false: }
636     { \prg_return_true: }
637 }
638 \cs_new:Npn \__hyp_check_link_nesting:TF #1 #2
639 {
640   \use_i:nn {#1}{#2}
641 }
642 \keys_define:nn { hyp }
643 {
644   nested-links .choice:,
645   nested-links / true .code:n =
646     { \cs_set_eq:NN \__hyp_check_link_nesting:TF \use_i:nn },

```



```

647     nested-links / false .code:n =
648     { \cs_set_eq:NN \__hyp_check_link_nesting:TF \__hyp_if_outer_link:TF },
649     nested-links .default:n = {true}
650 }

```

10.2 Anchors / destinations

The first three commands are needed for “anchors”. At first the internal commands to create a destination. It uses `\Hy@WrapperDef` to make it babel safe, it is not clear if this is still needed, but we leave it for now.

```

\__hyp_destination:nn \__hyp_destination:nn {(destination name)} {(location)}

```

The `{(destination name)}` is encoded with the method stored in `\l__hyp_text_enc_dest_tl`. The location should be one of `fit`, `fith`, `fitv`, `fitbv`, `fitbh`, `fitr`, `xyz`, `fitrbx`. The last will make use of `\l__hyp_dest_box`

```

\__hyp_destination:nn
651 \Hy@WrapperDef \__hyp_destination:nn #1 #2
652 {
653   \mode_if_horizontal:T { \@savsf\spacefactor }
654   \Hy@SaveLastskip      %defined in hyperref
655   \Hy@VerboseAnchor{#1} %defined in hyperref, for debugging
656   \__hyp_text_pdfstring:eoN
657   { \HyperDestNameFilter{#1} }
658   { \l__hyp_text_enc_dest_tl }
659   \l__hyp_tmpa_tl
660   \str_if_eq:nnTF {#2} {fitrbox}
661   {
662     \exp_args:NV
663     \pdf_destination:nnnn \l__hyp_tmpa_tl
664     { \box_wd:N \l__hyp_dest_box }
665     { \box_ht:N \l__hyp_dest_box }
666     { \box_dp:N \l__hyp_dest_box }
667   }
668   {
669     \exp_args:NV
670     \pdf_destination:nf
671     { \l__hyp_tmpa_tl }
672     { #2 }
673   }
674   \Hy@RestoreLastskip  %defined in hyperref
675   \mode_if_horizontal:T { \spacefactor\@savsf }
676 }

```

(End of definition for `__hyp_destination:nn`.)

These are the three destinations commands. They are modelled along the xetex version. It is not quite clear if really all three are needed for the backends supported by this driver, but changing the hyperref code would be difficult. We add a hook. This allows e.g. the tagging code to create also a structured destination. We don't use the cmd hook, as we want the same hook for both start commands. We make the current dest name available so that the hook code can use it.

```

\hyper@anchor
\hyper@anchorstart 677 \tl_new:N\l_hyp_current_dest_name_tl
\hyper@anchorend 678 \hook_new:n{hyp/anchor}
hyp/anchor 679 \cs_new_protected:Npn \hyper@anchor #1
\l_hyp_current_dest_name_tl 680 {
681   \exp_args:NnV
682     \__hyp_destination:nn {#1} \l__hyp_dest_pdfview_tl
683   \tl_set:Nn \l_hyp_current_dest_name_tl {#1}
684   \hook_use:n{hyp/anchor}
685 }
686
687 \cs_new_protected:Npn \hyper@anchorstart #1
688 {
689   \Hy@activeanchortrue
690   \exp_args:NnV
691     \__hyp_destination:nn {#1} \l__hyp_dest_pdfview_tl
692   \tl_set:Nn \l_hyp_current_dest_name_tl {#1}
693   \hook_use:n{hyp/anchor}
694 }
695
696 \cs_new_protected:Npn \hyper@anchorend
697 {
698   \Hy@activeanchorfalse
699 }

```

(End of definition for `\hyper@anchor` and others.)

10.3 GoTo Links

The next three commands are for links inside the document, to destinations (GoTo links). The definition in `hyperref` have a first argument which can be used to pass a semantical context. Currently this argument is only used for `\cite` and only to change the color. The new implementation uses it for a real hook.

At first the internal link commands:

```

700 \cs_new_protected:Npn \__hyp_link_goto_begin:nw #1
701 {
702   \mode_leave_vertical:
703   \protected@edef \l__hyp_dest_name_tmpa_tl { #1 }
704   \tl_if_empty:NTF \l__hyp_dest_name_tmpa_tl
705     {
706       \msg_warning:nne
707         { hyp }
708         { empty-destination-name }
709         { \c__hyp_dest_undefined_tl }
710       \tl_set_eq:NN \l__hyp_dest_name_tmpa_tl \c__hyp_dest_undefined_tl
711     }
712     {
713       \__hyp_text_pdfstring:eoN
714       { \exp_args:No \HyperDestNameFilter { \l__hyp_dest_name_tmpa_tl } }
715       { \l__hyp_text_enc_dest_tl }
716       \l__hyp_dest_name_tmpa_tl
717     }
718   \exp_args:No

```

```

719     \pdfannot_link_goto_begin:nw { \l__hyp_dest_name_tmpa_tl }
720 }
721
722 \cs_new_protected:Npn \__hyp_link_goto_end:
723 {
724     \pdfannot_link_goto_end:
725 }

```

Now the three hyperref commands. The split commands `\hyper@linkstart` and `\hyper@linkend` are used for footnotemarks, toc and natbib-cites.

`\hyper@link` `\hyper@link{<context>}{<destination name>}{<link text>}`

This creates a complete GoTo link around the `<link text>` pointing to `<destination name>`. The hook `hyp/link/<context>` is executed at the begin if it exists.

The only `<context>` for which a hook is predefined is `cite`. Packages which want to use another `<context>` should initialize the hook like this:

```

\IfHookExistsTF{hyp/link/context}{ }
{ \NewHook{hyp/link/context} }

```

The hook code is executed in a group but before all the pdfannot hooks.

`\hyper@linkstart` `\hyper@linkstart{<context>}{<destination name>}`
`\hyper@linkend` `\hyper@linkend`

This creates the start and end commands for a GoTo link around the text between both pointing to `<destination name>`. The hook `hyp/link/<context>` is executed at the begin if it exists as with `\hyper@link`

The commands open and close a group, so should be placed carefully. .

hyperref adds a group with `\Hy@colorlink`, we move this outside the link so that it groups the context hook too. We store again the destination name in the public tl `\l_hyp_current_dest_name_tl` so that the hook code can make use of it

```

726
727 \cs_new_protected:Npn \hyper@link #1 #2 #3 %#1 context, #2=destination name, #3 content
728 {
729     \bool_if:NTF \l__hyp_annot_GoTo_bool
730     {
731         \int_gincr:N\g__hyp_linknestlevel_int
732         \__hyp_check_link_nesting:TF
733         {
734             \Hy@VerboseLinkStart{#1}{#2}
735             \group_begin:
736             \tl_set:Nn \l_hyp_current_dest_name_tl {#2}

```

this socket adds something to the `/Contents` key.

```

737         \socket_use:nnn{hyp/link/GoTo/Contents}{#2}{#3}
738         \hook_use:n {hyp/link/#1}
739         \__hyp_link_goto_begin:nw {#2}#3\Hy@xspace@end
740         \__hyp_link_goto_end:
741         \group_end:
742         \Hy@VerboseLinkStop
743     }
744     {
745         \group_begin: #3\group_end:

```

```

746     }
747     \int_gdecr:N\g__hyp_linknestlevel_int
748   }
749   {{\let\protect\relax#3}}
750 }
751 \cs_new_protected:Npn \hyper@linkstart #1 #2 %#1 context, #2=destination name
752 {
753   \bool_if:NT \l__hyp_annot_GoTo_bool
754   {
755     \int_gincr:N\g__hyp_linknestlevel_int
756     \__hyp_check_link_nesting:TF
757     {
758       \Hy@VerboseLinkStart{#1}{#2}% only for debug
759       \group_begin:
760       \tl_set:Nn \l_hyp_current_dest_name_tl {#2}
761       \socket_use:nnn{hyp/link/GoTo/Contents}{#2}{}
762       \hook_use:n {hyp/link/#1}
763       \__hyp_link_goto_begin:nw {#2}
764     }
765     {
766       \group_begin:
767     }
768   }
769 }
770
771 \cs_new_protected:Npn \hyper@linkend
772 {
773   \bool_if:NT \l__hyp_annot_GoTo_bool
774   {
775     \__hyp_check_link_nesting:TF
776     {
777       \__hyp_link_goto_end:
778       \group_end:
779       \Hy@VerboseLinkStop
780     }
781     {
782       \group_end:
783     }
784     \int_gdecr:N\g__hyp_linknestlevel_int
785   }
786 }

```

10.4 URI links

We define a dictionary for the action dictionary. For now it is public.

```

787 \pdfdict_new:n {l_hyp/annot/A/URI}
788 \pdfdict_put:nnn {l_hyp/annot/A/URI}{Type}{/Action}
789 \pdfdict_put:nnn {l_hyp/annot/A/URI}{S}{/URI}
790
791 \cs_new_protected:Npn \hyper@linkurl #1 #2 %#1:link text #2: URI,
792 {
793   \bool_if:NTF \l__hyp_annot_URI_bool
794   {
795     \int_gincr:N\g__hyp_linknestlevel_int

```

```

796     \__hyp_check_link_nesting:TF
797     {
798         \group_begin:
799         \__hyp_text_pdfstring:eoN
800         { #2}
801         { \l__hyp_text_enc_uri_print_tl }
802         \l__hyp_uri_tmpa_tl
803         \pdfdict_put:nno{l_hyp/annot/A/URI}{URI}{\l__hyp_uri_tmpa_tl}
804         \bool_if:NT \l__hyp_href_url_ismap_bool
805         {
806             \pdfdict_put:nnn{l_hyp/annot/A/URI}{IsMap}{true}
807         }

```

This socket adds something to the /Contents key.

```

808     \socket_use:nn{hyp/link/URI/Contents}{#2}
809     \cs_set_eq:NN \# \c_hash_str
810     \cs_set_eq:NN \% \c_percent_str
811     \Hy@safe@activetrue
812     \mode_leave_vertical:
813     \pdfannot_dict_put:nne {link/URI}{A}{<<\pdfdict_use:n {l_hyp/annot/A/URI}>>}
814     \pdfannot_link:nen { URI }
815     {
816     }
817     {
818         \let\protect\relax
819         #1
820         \Hy@xspace@end
821         \Hy@VerboseLinkStop %where is the start??
822     }
823     \group_end:
824     }
825     {
826         \group_begin: #1 \group_end:
827     }
828     \int_gdecr:N\g__hyp_linknestlevel_int
829     }
830     {{\let\protect\relax#1}}
831 }
832

```

10.5 GoToR Links files

```

833 \pdfdict_new:n {l_hyp/annot/A/GoToR}
834 \pdfdict_put:nnn {l_hyp/annot/A/GoToR}{Type}{/Action}
835 \pdfdict_put:nnn {l_hyp/annot/A/GoToR}{S}{/GoToR}
836
837 \cs_generate_variant:Nn \pdffile_embed_file:nnn {noe}
838 \cs_new_protected:Npn \hyper@linkfile #1 #2 #3 % link text, filename, destname
839 {
840     \bool_if:NTF \l__hyp_annot_GoToR_bool
841     {
842         \int_gincr:N\g__hyp_linknestlevel_int
843         \__hyp_check_link_nesting:TF
844         {

```

```

845 \group_begin:
846 \tl_set:Nc \l__hyp_filename_tmpa_tl { \text_expand:n { #2 } }
847 \exp_args:Nc
848 \pdf_object_if_exist:nF { __hyp_file_\tl_to_str:N \l__hyp_filename_tmpa_tl }
849 {
850 \pdfdict_put:nne { l_pdffile/Filespec}{Subtype}{\pdf_name_from_unicode_e:n
851 \pdffile_embed_file:noe
852 {}
853 {\l__hyp_filename_tmpa_tl }
854 {__hyp_file_\tl_to_str:N \l__hyp_filename_tmpa_tl }
855 }
856 \pdfdict_put:nne
857 {l_hyp/annot/A/GoToR}
858 {F}
859 {\pdf_object_ref:e {__hyp_file_\tl_to_str:N \l__hyp_filename_tmpa_tl}}
860 \__hyp_text_pdfstring:nnN
861 { #3 }
862 { \l__hyp_text_enc_dest_print_tl }
863 \l__hyp_dest_name_tmpa_tl

```

This socket adds something to the /Contents key.

```

864 \socket_use:nn{hyp/link/GoToR/Contents}{#2}
865 \tl_if_blank:eTF {#3}
866 {
867 \pdfdict_put:nne {l_hyp/annot/A/GoToR}{D}
868 {
869 [
870 \int_eval:n
871 { \int_max:nn {0}{ 0\l__hyp_href_pdf_page_tl - 1 }}
872 /\l__hyp_dest_pdfremotestartview_tl
873 ]
874 }
875 }
876 {
877 \pdfdict_put:nno {l_hyp/annot/A/GoToR}{D}{\l__hyp_dest_name_tmpa_tl}
878 }
879 \mode_leave_vertical:

```

We use an extra object here, as ghostscript doesn't like the object reference in the dict

<https://chat.stackexchange.com/transcript/message/57361080#57361080>

```

880 \pdf_object_unnamed_write:ne{dict}{\pdfdict_use:n {l_hyp/annot/A/GoToR}}
881 \pdfannot_dict_put:nne {link/GoToR}{A}{\pdf_object_ref_last:}
882 \pdfannot_link:nnn %expansion??
883 { GoToR }
884 {
885 }
886 {
887 \let\protect\relax
888 #1\Hy@xspace@end
889 \Hy@VerboseLinkStop %where is the start??
890 }
891 \group_end:
892 }
893 {
894 \group_begin: #1 \group_end:

```

```

895     }
896     \int_gdecr:N\g__hyp_linknestlevel_int
897   }
898   {{\let\protect\relax#1}}
899 }

```

10.6 Launch links

We define `\hyper@linklaunch` for naming consistency

```

900 \pdfdict_new:n {l_hyp/annot/A/Launch}
901 \pdfdict_put:nnn {l_hyp/annot/A/Launch}{Type}{/Action}
902 \pdfdict_put:nnn {l_hyp/annot/A/Launch}{S}{/Launch}
903
904 \cs_new_protected:Npn \hyper@linklaunch #1 #2 #3 % filename, link text, Parameters
905 {
906   \bool_if:NTF \l__hyp_annot_Launch_bool
907   {
908     \int_gincr:N\g__hyp_linknestlevel_int
909     \__hyp_check_link_nesting:TF
910     {
911       \group_begin:
912         \__hyp_text_pdfstring:nnN
913         { #1 }
914         { \l__hyp_text_enc_file_print_tl }
915         \l__hyp_filename_tmpa_tl
916         \pdfdict_put:nno {l_hyp/annot/A/Launch}{F}{\l__hyp_filename_tmpa_tl}
917         \__hyp_text_pdfstring:noN
918         { #3 }
919         { \l__hyp_text_enc_para_print_tl }
920         \l__hyp_para_tmpa_tl
921       \bool_if:nTF
922       {
923         \str_if_eq_p:Vn \l__hyp_para_tmpa_tl {()}
924         ||
925         \pdf_version_compare_p:Nn > {1.9}
926       }
927       {
928         \pdfdict_remove:nn {l_hyp/annot/A/Launch}{Win}
929       }
930       {
931         \pdfdict_put:nne
932         {l_hyp/annot/A/Launch}
933         {Win}
934         {<</P \l__hyp_para_tmpa_tl /F \l__hyp_filename_tmpa_tl >>}
935       }
936     \mode_leave_vertical:
937     \pdfannot_dict_put:nne {link/Launch}{A}{<<\pdfdict_use:n {l_hyp/annot/A/Launch}
938     \pdfannot_link:nen
939     { Launch }
940     {
941       % /A
942       % <<
943       % \pdfdict_use:n {l_hyp/annot/A/Launch}
944       % >>
945     }

```

```

946         {
947             \let\protect\relax
948             #2\Hy@xspace@end
949             \Hy@VerboseLinkStop %where is the start??
950         }
951     \group_end:
952 }
953 { \group_begin: #2 \group_end: }
954 \int_gdecr:N\g__hyp_linknestlevel_int
955 }
956 {\let\protect\relax#2}}
957 }

```

The actually command used by `hyperref` is `\@hyper@launch` which uses a delimited argument, because of the color the definition is a bit convoluted.

```

958 \use:e
959 { % filename, anchor text, linkname
960   \cs_set_protected:Npn \exp_not:N \@hyper@launch run \c_colon_str #1 \exp_not:N \ \ #2 #3
961 }
962 {
963   \hyper@linklaunch {#1}{#2}{#3}
964 }

```

10.7 Named links (menu)

We also define `\hyper@linknamed` for consistency.

```

965 \pdfdict_new:n {l_hyp/annot/A/Named}
966 \pdfdict_put:nnn {l_hyp/annot/A/Named}{Type}{/Action}
967 \pdfdict_put:nnn {l_hyp/annot/A/Named}{S}{/Named}
968
969 \cs_new_protected:Npn \hyper@linknamed #1 #2 %#1 action, #2 link text
970 {
971   \bool_if:NTF \l__hyp_annot_Named_bool
972   {
973     \int_gincr:N\g__hyp_linknestlevel_int
974     \__hyp_check_link_nesting:TF
975     {
976       \group_begin:
977       \pdfmeta_standard_verify:nnTF {named_actions}{#1}
978       {
979         \mode_leave_vertical:
980         \pdfdict_put:nne {l_hyp/annot/A/Named}{N}
981           {\pdf_name_from_unicode_e:n{#1}}
982         \pdfannot_dict_put:nne {link/Named}{A}{<<\pdfdict_use:n {l_hyp/annot/A/Named}
983         \pdfannot_link:nnn { Named }
984         {
985           %           /A
986           %           <<
987           %           \pdfdict_use:n { l_hyp/annot/A/Named }
988           %           >>
989         }
990       }
991       #2
992       \Hy@xspace@end

```



```

993         \Hy@VerboseLinkStop
994     }
995 }
996 {
997     \msg_warning:nnn { hyp } { pdfa-no-named-action }{#1}
998     #2
999 }
1000 \group_end:
1001 }
1002 { \group_begin: #2 \group_end: }
1003 \int_gdecr:N\g__hyp_linknestlevel_int
1004 }
1005 {\let\protect\relax#2}}
1006 }
1007

```

11 Link decorations

11.1 Functions to export and select colors

We support two input syntax: color expressions and model with values. Exporting can be done by first setting the color with `__hyp_color_set:nn` (if needed to a temporary color name) and then using `\color_export:nnN`. But we need a variant as the export format `space-sep-cmyk` or `space-sep-rgb` is stored in a tl.

```
1008 \cs_generate_variant:Nn \color_export:nnN {nVN}
```

```
\__hyp_color_select:n \__hyp_color_select:n {<color>}
```

These commands select a (text) color. `{<color>}` should have either the format `[model]{value}` or be a color expression. For examples: `[rgb]{1,0,.5}` or `red!50!blue`

```
\__hyp_color_select:n Color keys need to parse color expressions. Two input types are supported: color=[rgb]{1,0,.5}
\__hyp_color_select_aux:wn and color=red!50!blue.
```

```

1009 \cs_new_protected:Npn \__hyp_color_select:n #1
1010 {
1011     \tl_if_head_eq_charcode:nNTF {#1}[ %]
1012     {
1013         \__hyp_color_select_aux:wn #1
1014     }
1015     {
1016         \color_select:n {#1}
1017     }
1018 }
1019
1020 \cs_new_protected:Npn \__hyp_color_select_aux:wn [#1] #2
1021 {
1022     \color_select:nn {#1}{#2}
1023 }
1024
1025 \cs_generate_variant:Nn \__hyp_color_select:n {e}

```

(End of definition for `_hyp_color_select:n` and `_hyp_color_select_aux:wn`.)

```
\_hyp_color_set:nn \_hyp_color_set:nn {< name >} {< color >}
```

These commands store the color in `{< name >}`. `{< color >}` should have either the format `[model]{value}` or be a color expression. For examples: `[rgb]{1,0,.5}` or `red!50!blue`

```
\_hyp_color_set:nn \_hyp_color_set_aux:nwn
```

Color keys need to parse color expressions. Two input types are supported: `color=[rgb]{1,0,.5}` and `color=red!50!blue`.

```
1026 \cs_new_protected:Npn \_hyp_color_set:nn #1 #2
1027 {
1028   \tl_if_head_eq_charcode:nNTF {#2}[ %]
1029   {
1030     \_hyp_color_set_aux:nwn { #1 } #2
1031   }
1032   {
1033     \color_set:nn {#1} {#2}
1034   }
1035 }
1036
1037 \cs_new_protected:Npn \_hyp_color_set_aux:nwn #1 [#2] #3
1038 {
1039   \color_set:nnn {#1}{#2}{#3}
1040 }
1041
1042 \cs_generate_variant:Nn \_hyp_color_set:nn {ne}
```

(End of definition for `_hyp_color_set:nn` and `_hyp_color_set_aux:nwn`.)

11.2 Textcolor of links

colors are added in the hooks. This means that they can also be removed if needed. They add a group—this isn't needed with `hyperref` code, but could be relevant with low-level annotations.

```
1043 \prop_map_inline:Nn \c__hyp_map_hyp_annot_prop
1044 {
1045   \hook_gput_code:nnn
1046     {pdfannot/link/#2/begin}
1047     {hyp/color}
1048     {
1049       \bool_if:cT { l_hyp_annot_color#1_bool }
1050       {
1051         \group_begin:
1052         \color_select:n { hyp/color/#1}
1053       }
1054     }
1055   \hook_gput_code:nnn
1056     {pdfannot/link/#2/end}
1057     {hyp/color}
1058     {
1059       \bool_if:cT { l_hyp_annot_color#1_bool }
1060       {
1061         \group_end:
1062       }
1063     }
1064 }
```

```

1063     }
1064 }

```

`colorlinks` (*setup key*) This key also resets the border and borderstyle.

```

1065 \keys_define:nn { hyp }
1066 {
1067   ,colorlinks .choice:
1068   ,colorlinks / true .meta:n =
1069   {
1070     ,pdfborder={0~0~0}
1071     ,pdfborderstyle=
1072     ,colorurl =#1
1073     ,colorlink =#1
1074     ,colorryn =#1
1075     ,colormenu =#1
1076     ,colorfile =#1
1077   }
1078   ,colorlinks / false .meta:n =
1079   {
1080     ,colorurl =#1
1081     ,colorlink =#1
1082     ,colorryn =#1
1083     ,colormenu =#1
1084     ,colorfile =#1
1085   }
1086   ,colorlinks .default:n = {true}
1087 }

```

`colorurl` (*setup key*)

`colorlink` (*setup key*)

`colorryn` (*setup key*)

`colormenu` (*setup key*)

`colorfile` (*setup key*)

`urlcolor` (*setup key*)

`linkcolor` (*setup key*)

`runcolor` (*setup key*)

`menucolor` (*setup key*)

`filecolor` (*setup key*)

`allcolors` (*setup key*)

```

1088 \seq_map_inline:Nn \c__hyp_annot_types_seq
1089 {
1090   \keys_define:nn { hyp }
1091   {
1092     ,color#1 .bool_set:c = { l_hyp_annot_color#1_bool }
1093     ,#1color .code:n = { \__hyp_color_set:ne {hyp/color/#1}{##1} }
1094   }
1095 }
1096
1097 \keys_define:nn { hyp }
1098 {
1099   ,allcolors .meta:n =
1100   {
1101     ,urlcolor=#1
1102     ,linkcolor=#1
1103     ,runcolor=#1
1104     ,filecolor=#1
1105     ,menucolor=#1
1106   }
1107   ,allcolors .value_required:n = true
1108 }

```

11.3 Style and color of borders

11.3.1 Border color

The border color is set by link type. The color can be set as rgb (default) or cmyk (unusual). This can be set with the `bordercolormodel` key:

`bordercolormodel` (*setup key*)

```
1109 \keys_define:nn { hyp }
1110   {
1111     ,bordercolormodel .choices:nn =
1112       {rgb,cmyk}
1113       { \str_gset:Nn \g__hyp_bordercolormodel_str {space-sep-#1}}
1114     ,bordercolormodel .initial:n ={rgb}
1115   }

1116 \prop_map_inline:Nn \c__hyp_map_hyp_annot_prop
1117   {
1118     \keys_define:nn { hyp }
1119     {
1120       #1bordercolor .code:n =
1121       {
1122         \tl_if_empty:nTF { ##1 }
1123         {
1124           \pdfannot_dict_remove:nn
1125             {link/#2}
1126             { C }
1127         }
1128         {
1129           \__hyp_color_set:ne {hyp/color/#1border}{##1}
1130           \color_export:nVN
1131             {hyp/color/#1border}
1132           \g__hyp_bordercolormodel_str
1133           \l__hyp_tmpa_tl
1134           \pdfannot_dict_put:nne
1135             {link/#2}
1136             { C }
1137             { [\l__hyp_tmpa_tl] }
1138         }
1139       }
1140     }
1141   }
1142
1143 \keys_define:nn { hyp }
1144   {
1145     ,allbordercolors .meta:n =
1146     {
1147       ,linkbordercolor=#1
1148       ,urlbordercolor =#1
1149       ,filebordercolor=#1
1150       ,menubordercolor=#1
1151       ,runbordercolor =#1
1152     }
1153     ,allbordercolors .value_required:n = true
1154   }
```

1155

11.3.2 Borderwidth and -arc

```
1156 \prop_map_inline:Nn \c__hyp_map_hyp_annot_prop
1157 {
1158   \keys_define:nn { hyp }
1159   {
1160     #1border .code:n =
1161     {
1162       \tl_if_empty:nTF { ##1 }
1163       {
1164         \pdfannot_dict_remove:nn
1165         {link/#2}
1166         { Border }
1167       }
1168       {
1169         \pdfannot_dict_put:nnn
1170         {link/#2}
1171         { Border }
1172         { [##1] }
1173       }
1174     }
1175   }
1176 }
1177 \keys_define:nn { hyp }
1178 {
1179   ,pdfborder .code:n =
1180   {
1181     \tl_if_empty:nTF { #1 }
1182     {
1183       \prop_map_inline:Nn \c__hyp_map_hyp_annot_prop
1184       {
1185         \pdfannot_dict_remove:nn
1186         {link/##2}
1187         { Border }
1188       }
1189     }
1190     {
1191       \prop_map_inline:Nn \c__hyp_map_hyp_annot_prop
1192       {
1193         \pdfannot_dict_put:nnn
1194         {link/##2}
1195         { Border }
1196         { [#1] }
1197       }
1198     }
1199   }
1200   ,pdfborder .initial:n = {0~0~1},
1201 }
```

11.3.3 Borderstyle

This keys fill the extended /BS entry (a dictionary).

```

pdfborderstyle (setup key)
urlborderstyle (setup key) 1202 \prop_map_inline:Nn \c__hyp_map_hyp_annot_prop
linkborderstyle (setup key) 1203 {
runborderstyle (setup key) 1204   \keys_define:nn { hyp }
fileborderstyle (setup key) 1205   {
menuborderstyle (setup key) 1206     #1borderstyle .code:n =
1207     {
1208       \tl_if_empty:nTF { ##1 }
1209       {
1210         \pdfannot_dict_remove:nn
1211         {link/#2}
1212         { BS }
1213       }
1214       {
1215         \pdfannot_dict_put:nnn
1216         {link/#2}
1217         { BS }
1218         { <<##1>> }
1219       }
1220     }
1221   }
1222 }
1223 \keys_define:nn { hyp }
1224 {
1225   ,pdfborderstyle .code:n =
1226   {
1227     \tl_if_empty:nTF { #1 }
1228     {
1229       \prop_map_inline:Nn \c__hyp_map_hyp_annot_prop
1230       {
1231         \pdfannot_dict_remove:nn
1232         {link/##2}
1233         { BS }
1234       }
1235     }
1236     {
1237       \prop_map_inline:Nn \c__hyp_map_hyp_annot_prop
1238       {
1239         \pdfannot_dict_put:nnn
1240         {link/##2}
1241         { BS }
1242         { <<#1>> }
1243       }
1244     }
1245   }
1246   ,pdfborderstyle .initial:n = {},
1247 }

```

11.4 ocolorlinks

OCG colorlinks need objects and an entry in the catalog. Perhaps the objects need public names to avoid that ocolorlinks has to create duplicates? TODO

`__hyp_ocg_init:` This commands write the objects as needed if ocg links are used. The initialization should happens only once.

```

1248 \cs_new_protected:Npn \__hyp_ocg_init:
1249 {
1250   \pdf_object_new:n { __hyp/OCG/View }
1251   \pdf_object_new:n { __hyp/OCG/Print }
1252   \pdf_object_new:n { __hyp/OCG/config }
1253   \pdf_object_new:n { __hyp/OCG/refarray }
1254   \pdf_object_write:nne { __hyp/OCG/refarray } { array }
1255   {
1256     \pdf_object_ref:n { __hyp/OCG/View }
1257     \c_space_tl
1258     \pdf_object_ref:n { __hyp/OCG/Print }
1259   }
1260   \pdf_object_write:nnn { __hyp/OCG/View } { dict }
1261   {
1262     /Type/OCG
1263     /Name(View)
1264     /Usage
1265     <<
1266       /Print <</PrintState/OFF>>~
1267       /View <</ViewState/ON >>~
1268     >>
1269   }
1270   \pdf_object_write:nnn { __hyp/OCG/Print } { dict }
1271   {
1272     /Type/OCG
1273     /Name(Print)
1274     /Usage
1275     <<
1276       /Print <</PrintState/ON>>~
1277       /View <</ViewState/OFF>>~
1278     >>
1279   }
1280   \pdfmanagement_add:nne { Catalog / OCProperties }{OCGs }{ \pdf_object_ref:n {__hyp/OCG/View} }
1281   \pdfmanagement_add:nne { Catalog / OCProperties }{OCGs }{ \pdf_object_ref:n {__hyp/OCG/Print} }
1282   \pdf_object_write:nne { __hyp/OCG/config } { dict }
1283   {
1284     /OFF[\pdf_object_ref:n { __hyp/OCG/Print } ]
1285     /AS[
1286       <<
1287         /Event/View
1288         /OCGs\c_space_tl \pdf_object_ref:n { __hyp/OCG/refarray }
1289         /Category[/View]
1290       >>
1291       <<
1292         /Event/Print
1293         /OCGs\c_space_tl \pdf_object_ref:n { __hyp/OCG/refarray }
1294         /Category[/Print]
1295       >>
1296       <<
1297         /Event/Export
1298         /OCGs\c_space_tl \pdf_object_ref:n { __hyp/OCG/refarray }
1299         /Category[/Print]

```

```

1300         >>
1301         ]
1302     }
1303     \pdfmanagement_add:nne { Catalog / OCGProperties }{ D }{ \pdf_object_ref:n { __hyp/OCG
1304     \cs_gset:Npn \__hyp_ocg_init: {}
1305 }

```

(End of definition for __hyp_ocg_init:.)

We use like with colors a hook, this allows ocgx to replace it. The implementation is rather simple and uses a box.

```

1306 \prop_map_inline:Nn \c__hyp_map_hyp_annot_prop
1307 {
1308     \hook_gput_code:nnn
1309     {pdfannot/link/#2/begin}
1310     {hyp/ocg}
1311     {
1312         \bool_if:cT { l_hyp_annot_ocgcolor#1_bool }
1313         {
1314             \__hyp_ocg_init:
1315             \group_begin:
1316             \hbox_set:Nw \l__hyp_tmpa_box
1317         }
1318     }
1319     \hook_gput_code:nnn
1320     {pdfannot/link/#2/end}
1321     {hyp/ocg}
1322     {
1323         \bool_if:cT { l_hyp_annot_ocgcolor#1_bool }
1324         {
1325             \hbox_set_end:
1326             \mbox
1327             {
1328                 \pdf_bdcobject:nn {OC}{__hyp/OCG/Print}
1329                 \hbox_overlap_right:n { \box_use:N \l__hyp_tmpa_box }
1330                 \pdf_emc:
1331                 \pdf_bdcobject:nn {OC}{__hyp/OCG/View}
1332                 \group_begin:
1333                 \color_select:n { hyp/color/#1 }
1334                 \box_use_drop:N \l__hyp_tmpa_box
1335                 \group_end:
1336                 \pdf_emc:
1337             }
1338             \group_end:
1339         }
1340     }
1341 }

```

ocgcolorlinks (setup key) These are the keys for ocgcolors. We try to disable it for pdf version below 1.5

```

ocgcolorlink (setup key) 1342 \bool_lazy_or:nnTF
  ocgcolorurl (setup key) 1343 { \pdf_version_compare_p:Nn > {1.4} }
ocgcolorfile (setup key) 1344 { \str_if_eq_p:ee{\pdf_version_major:}{-1} }
ocgcolormenu (setup key) 1345 {
  ocgcolorrun (setup key) 1346   \keys_define:nn { hyp }
1347   {

```



```

1348     ,_ocgcolorlinks .meta:n =
1349     {
1350         ocgcolorlink=#1,
1351         ocgcolorurl=#1,
1352         ocgcolorfile=#1,
1353         ocgcolorruncolor=#1,
1354         ocgcolormenu=#1
1355     }
1356     ,_ocgcolorlinks .default:n = true
1357 }
1358 }
1359 {
1360     \keys_define:nn { hyp }
1361     {
1362         ,_ocgcolorlinks .code:n =
1363         {
1364             \msg_warning:nnee
1365             { hyp }
1366             { ignore-deprecated-or-unknown-option-in-pdf-version }
1367             { ocgcolorlinks } { \pdf_version_major:.\pdf_version_minor: }
1368         }
1369     }
1370 }
1371
1372 \keys_define:nn { hyp }
1373 {
1374     ,ocgcolorlinks .choice:
1375     ,ocgcolorlinks / true .meta:n =
1376     {
1377         pdfborder      ={{0-0-0}},
1378         pdfborderstyle ={{}},
1379         colorlinks     = false,
1380         _ocgcolorlinks = true
1381     }
1382     ,ocgcolorlinks / false .meta:n =
1383     {
1384         _ocgcolorlinks = false
1385     }
1386     ,ocgcolorlinks .default:n = {true}
1387 }
1388
1389 \seq_map_inline:Nn \c__hyp_annot_types_seq
1390 {
1391     \bool_lazy_or:nnTF
1392     { \pdf_version_compare_p:Nn > {1.4} }
1393     { \str_if_eq_p:ee{\pdf_version_major:}{-1} }
1394     {
1395         \keys_define:nn { hyp }
1396         {
1397             ,ocgcolor#1 .bool_set:c = { l_hyp_annot_ocgcolor#1_bool }
1398         }
1399     }
1400 }
1401 \keys_define:nn { hyp }

```

```

1402     {
1403         ,ocgcolor#1 .code:n=
1404         {
1405             \msg_warning:nnee
1406             { hyp }
1407             { ignore-deprecated-or-unknown-option-in-pdf-version }
1408             { ocgcolor#1 }
1409             { \pdf_version_major:\pdf_version_minor: }
1410         }
1411     }
1412 }
1413 }

```

11.5 Highlighting

This keys set what happens if you click on a link

```

1414 \prop_map_inline:Nn \c__hyp_map_hyp_annot_prop
1415 {
1416     \keys_define:nn { hyp }
1417     {
1418         ,#1highlight .choices:nn =
1419         { /I, /N, /O, /P}
1420         {
1421             \pdfannot_dict_put:nnn
1422             {link/#2}
1423             { H }
1424             { ##1 }
1425         }
1426         ,#1highlight / .code:n =
1427         {
1428             \pdfannot_dict_remove:nn
1429             {link/#2}
1430             { H }
1431         }
1432     }
1433     ,#1highlight / unknown .code:n =
1434     {
1435         \msg_warning:nnee { hyp } { unknown-choice+empty }
1436         { #1highlight }
1437         { /I~(inverse), /N~(no effect), /O~(outline), /P~(inset) }
1438         { \exp_not:n {##1} }
1439     }
1440 }
1441 }
1442 }
1443 }
1444 }
1445 \keys_define:nn { hyp }
1446 {
1447     ,pdfhighlight .choices:nn =
1448     { /I, /N, /O, /P}
1449     {
1450         \prop_map_inline:Nn \c__hyp_map_hyp_annot_prop
1451         {

```

```

1452         \pdfannot_dict_put:nnn
1453         {link/###2}
1454         { H }
1455         { #1 }
1456     }
1457 }
1458 ,pdfhighlight / .code:n =
1459 {
1460     \prop_map_inline:Nn \c__hyp_map_hyp_annot_prop
1461     {
1462         \pdfannot_dict_remove:nn
1463         {link/##2}
1464         { H }
1465     }
1466 }
1467 ,pdfhighlight .initial:n = {/I},
1468 ,pdfhighlight / unknown .code:n =
1469 {
1470     \msg_warning:nnee { hyp } { unknown-choice+empty }
1471     { pdfhighlight }
1472     { /I~(inverse), /N~(no effect), /O~(outline), /P~(inset) }
1473     { \exp_not:n {#1} }
1474 }
1475 }

```

11.6 Hiding links

This key disable all appearance keys. The link themselves are still there.

```

hidelinks (setup key)
hidelink (setup key) 1476 \keys_define:nn { hyp }
hideurl (setup key) 1477 {
hidefile (setup key) 1478     hidelinks .meta:n =
hiderun (setup key) 1479     {
hidemenu (setup key) 1480         ,colorlinks      = false
1481         ,ocgcolorlinks = false
1482         ,pdfborder      = { 0~0~0 }
1483         ,pdfborderstyle=
1484     }
1485 }
1486
1487 \seq_map_inline:Nn \c__hyp_annot_types_seq
1488 {
1489     \keys_define:nn { hyp }
1490     {
1491         hide#1 .meta:n =
1492         {
1493             ,color#1      = false
1494             ,ocgcolor#1  = false
1495             ,#1border     = { 0~0~0 }
1496             ,#1borderstyle =
1497         }
1498     }
1499 }

```

11.7 color schemes and settings

This define the key for the color schemes and sets the default colors.

`colorscheme` (*setup key*)

```
1500 \keys_define:nn { hyp }
1501   {
1502     colorscheme .code:n =
1503     {
1504       \prop_map_inline:cn { c__hyp_colorscheme_#1_prop }
1505       {
1506         \keys_set:nn { hyp }
1507         {
1508           ##1 = ##2
1509         }
1510       }
1511     }
1512   }
1513 \keys_set:nn { hyp } {colorscheme=phelype}
```

12 Keys

12.1 Ignored keys

The following are ignored (with or without warnings)

`unicode` (*setup key*)

`pdfencoding` (*setup key*)

`pdfversion` (*setup key*)

```
1514 \keys_define:nn { hyp }
1515   {
1516     ,unicode .code:n = {}
1517     ,pdfencoding .code:n = {}
1518     ,pdfversion .code:n =
1519     {
1520       \msg_warning:nn { hyp }{ pdfversion-disabled }
1521     }
1522   }
1523 %
```

12.2 Various keys for the pdf and linking behaviour

This keys are typically set only once.

`verbose` (*setup key*)

`debug` (*setup key*)

`draft` (*setup key*)

`final` (*setup key*)

```
1524 \keys_define:nn { hyp }
1525   {
1526     ,verbose .legacy_if_set:n = {Hy@verbose}
1527     ,debug .legacy_if_set:n = {Hy@verbose}
1528   }
1529 \keys_define:nn { hyp }
1530   {
1531     ,draft .code:n =
1532     {
1533       \Hy@drafttrue
```

```

1534         \PassOptionsToPackage{draft}{bookmark}
1535     }
1536     ,final .code:n =
1537     {
1538         \Hy@finaltrue
1539         \PassOptionsToPackage{final}{bookmark}
1540     }
1541 }

extension (setup key)
hypertextnames (setup key) 1542 \keys_define:nn { hyp }
naturalnames (setup key) 1543 {
pageanchor (setup key) 1544     ,extension .tl_set:N = \XR@ext
linktoc (setup key) 1545     ,extension .initial:n= pdf
linktocpage (setup key) 1546     ,hypertextnames .legacy_if_set:n = {Hy@hypertextnames}
plainpages (setup key) 1547     ,linkfileprefix .tl_set:N = \Hy@linkfileprefix
localanchorname (setup key) 1548     ,localanchorname .legacy_if_set:n = {Hy@localanchorname}
linkfileprefix (setup key) 1549     ,naturalnames .legacy_if_set:n = {Hy@naturalnames}
1550     ,pageanchor .legacy_if_set:n = {Hy@pageanchor}
1551     ,plainpages .legacy_if_set:n = {Hy@plainpages}
1552 }
1553
1554 \keys_define:nn { hyp }
1555 {
1556     ,linktoc .choices:nn = { none, section, all, page }
1557     {
1558         \cs_set_eq:Nc \Hy@linktoc { Hy@linktoc@#1 }
1559     }
1560     ,linktoc / unknown .code:n =
1561     {
1562         \msg_warning:nnee { hyp } { unknown-choice }
1563         { linktoc }
1564         { none, section, all, page }
1565         { \exp_not:n {#1} }
1566     }
1567     ,linktocpage .choice:
1568     ,linktocpage / true .meta:n = {linktoc=page}
1569     ,linktocpage / false .meta:n = {linktoc=section}
1570     ,linktocpage .default:n = true
1571 }
1572

link (setup key) This booleans allow to disable the link types.
url (setup key) 1573 \prop_map_inline:Nn \c__hyp_map_hyp_annot_prop
file (setup key) 1574 {
menu (setup key) 1575     \keys_define:nn { hyp }
run (setup key) 1576     {
1577         ,#1 .bool_set:c = {l__hyp_annot_#2_bool}
1578     }
1579 }

1580 \keys_define:nn { hyp }
1581 {
1582     ,baseurl .code:n =

```

```

1583     {
1584     \__hyp_text_pdfstring:ooN { #1 } {\l__hyp_text_enc_uri_print_tl} \l__hyp_tmpa_tl
1585     \tl_if_empty:NTF \l__hyp_tmpa_tl
1586     {
1587     \pdfmanagement_remove:nn {Catalog} { URI }
1588     }
1589     {
1590     \pdfmanagement_add:nne {Catalog} { URI }{ <</Base \l__hyp_tmpa_tl>> }
1591     }
1592     \__hyp_store_metadata:nn {baseurl}{#1}
1593     }
1594 %only false does something ...
1595 ,bookmarks .choice:
1596 ,bookmarks / false .code:n = {\RemoveFromHook {begindocument/before}[hyperref/bookmark]}
1597 ,bookmarks / true .code:n = {}
1598 ,bookmarks .default:n = {true}
1599 ,bookmarksnumbered .legacy_if_set:n = {Hy@bookmarksnumbered}
1600 ,bookmarksopen .legacy_if_set:n = {Hy@bookmarksopen}
1601 ,bookmarksopenlevel .tl_set:N = \@bookmarksopenlevel
1602 ,bookmarkstype .tl_set:N = \Hy@bookmarkstype
1603 ,pdfcenterwindow .choice:
1604 ,pdfcenterwindow / false .code:n =
1605     {
1606     \pdfmanagement_remove:nn {Catalog / ViewerPreferences }{ CenterWindow }
1607     }
1608 ,pdfcenterwindow / true .code:n =
1609     {
1610     \pdfmanagement_add:nnn {Catalog / ViewerPreferences } { CenterWindow }{ true }
1611     }
1612 ,pdfcenterwindow / .code:n =
1613     {
1614     \pdfmanagement_remove:nn {Catalog / ViewerPreferences }{ CenterWindow }
1615     }
1616 ,pdfcenterwindow / unknown .code:n =
1617     {
1618     \msg_warning:nnee { hyp } { no-bool }
1619     { pdfcenterwindow }
1620     { \exp_not:n {#1} }
1621     }
1622 ,pdfcenterwindow .default:n = true
1623 ,pdfdirection .choice:
1624 ,pdfdirection / L2R .code:n =
1625     {
1626     \pdfmanagement_add:nnn {Catalog / ViewerPreferences } { Direction }{ /L2R }
1627     }
1628 ,pdfdirection / R2L .code:n =
1629     {
1630     \pdfmanagement_add:nnn {Catalog / ViewerPreferences } { Direction }{ /R2L }
1631     }
1632 ,pdfdirection / .code:n =
1633     {
1634     \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { Direction }
1635     }
1636 ,pdfdirection / unknown .code:n =

```

```

1637     {
1638         \msg_warning:nneee { hyp } { unknown-choice+empty }
1639         { pdfdirection }
1640         { L2R , R2L }
1641         { \exp_not:n {#1} }
1642     }
1643 ,pdffitwindow .choice:
1644 ,pdffitwindow / false .code:n =
1645     {
1646         \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { DisplayDocTitle }
1647     }
1648 ,pdffitwindow / true .code:n =
1649     {
1650         \pdfmanagement_add:nnn {Catalog / ViewerPreferences } { DisplayDocTitle } { true }
1651     }
1652 ,pdffitwindow .default:n = true
1653 ,pdfduplex .choices:nn =
1654 {Simplex, DuplexFlipShortEdge, DuplexFlipLongEdge}
1655 {
1656     \pdf_version_compare:NnTF > {1.6}
1657     {
1658         \pdfmanagement_add:nnn {Catalog / ViewerPreferences }
1659         { PrintDuplex } { /#1 }
1660     }
1661     {
1662         \msg_warning:nnee
1663         {hyp}
1664         {ignore-deprecated-or-unknown-option-in-pdf-version}
1665         {pdfduplex}
1666         {\pdf_version:}
1667     }
1668 }%
1669 ,pdfduplex / .code:n =
1670     {
1671         \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { PrintDuplex }
1672     }
1673 ,pdfduplex / unknown .code:n =
1674     {
1675         \msg_warning:nneee { hyp } { unknown-choice+empty }
1676         { pdfduplex }
1677         { Simplex, DuplexFlipShortEdge, DuplexFlipLongEdge }
1678         { \exp_not:n {#1} }
1679     }
1680 ,pdffitwindow .choice:
1681 ,pdffitwindow / false .code:n =
1682     {
1683         \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { FitWindow }
1684     }
1685 ,pdffitwindow / true .code:n =
1686     {
1687         \pdfmanagement_add:nnn {Catalog / ViewerPreferences } { FitWindow } { true }
1688     }
1689 ,pdffitwindow / .code:n =
1690     {

```

```

1691     \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { FitWindow }
1692   }
1693 ,pdffitwindow .default:n = true
1694 ,pdffitwindow / unknown .code:n =
1695   {
1696     \msg_warning:nnee { hyp } { no-bool }
1697     { pdffitwindow }
1698     { \exp_not:n {#1} }
1699   }
1700 ,pdflinkmargin .code:n = { \pdfannot_link_margin:n { #1 } }
1701 ,pdflinkmargin .initial:n = {1pt}
1702 ,pdfmenubar .choice:
1703 ,pdfmenubar / true .code:n =
1704   {
1705     \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { HideMenubar }
1706   }
1707 ,pdfmenubar / false .code:n =
1708   {
1709     \pdfmanagement_add:nn {Catalog / ViewerPreferences }
1710     { HideMenubar } { true }
1711   }
1712 ,pdfmenubar / .code:n =
1713   {
1714     \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { HideMenubar }
1715   }
1716 ,pdfmenubar .default:n = true
1717 ,pdfmenubar / unknown .code:n =
1718   {
1719     \msg_warning:nnee { hyp } { no-bool }
1720     { pdfmenubar }
1721     { \exp_not:n {#1} }
1722   }
1723 ,pdfnewwindow .choice:
1724 ,pdfnewwindow / true .code:n =
1725   {
1726     \pdfdict_put:nnn {l_hyp/annot/A/GoToR}{/NewWindow}{true}
1727     \pdfdict_put:nnn {l_hyp/annot/A/Launch}{/NewWindow}{true}
1728   }
1729 ,pdfnewwindow / false .code:n =
1730   {
1731     \pdfdict_put:nnn {l_hyp/annot/A/GoToR}{/NewWindow}{false}
1732     \pdfdict_put:nnn {l_hyp/annot/A/Launch}{/NewWindow}{false}
1733   }
1734 ,pdfnewwindow / .code:n =
1735   {
1736     \pdfdict_remove:nn {l_hyp/annot/A/GoToR}{/NewWindow}
1737     \pdfdict_remove:nn {l_hyp/annot/A/Launch}{/NewWindow}
1738   }
1739 ,pdfnonfullscreenpagemode .choices:nn =
1740 { UseNone, UseOutlines, UseThumbs, FullScreen, UseOC } %pdf 1.5
1741 {
1742   \pdfmanagement_add:nne {Catalog / ViewerPreferences }
1743   { NonFullScreenPageMode } {/#1}
1744 }

```



```

1745 ,pdfnonfullscreenpagemode / UseAttachments .code:n =
1746 {
1747     \pdf_version_compare:NnTF < {1.6}
1748     {
1749         %message
1750     }
1751     {
1752         \pdfmanagement_add:nne {Catalog / ViewerPreferences }
1753         {NonFullScreenPageMode}{/UseAttachments}
1754     }
1755 }
1756 ,pdfnonfullscreenpagemode / .code:n =
1757 {
1758     \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { NonFullScreenPageMode }
1759 }
1760 ,pdfnonfullscreenpagemode / unknown .code:n =
1761 {
1762     \msg_warning:nnee { hyp } { unknown-choice+empty }
1763     { pdfnonfullscreenpagemode }
1764     { UseNone, UseOutlines, UseThumbs, FullScreen, UseOC, UseAttachments (PDF 1.6) }
1765     { \exp_not:n {#1} }
1766 }
1767 ,pdfnumcopies .code:n =
1768 {
1769     \pdf_version_compare:NnTF > {1.6}
1770     {
1771         \tl_if_empty:nTF {#1}
1772         {
1773             \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { NumCopies }
1774         }
1775         {
1776             \pdfmanagement_add:nne {Catalog / ViewerPreferences }
1777             {NumCopies}{#1}
1778         }
1779     }
1780     {
1781         \msg_warning:nnee
1782         {hyp}
1783         {ignore-deprecated-or-unknown-option-in-pdf-version}
1784         {pdfnumcopies}
1785         {\pdf_version:}
1786     }
1787 }
1788 ,pdfpagelayout .choices:nn =
1789 { SinglePage, OneColumn, TwoColumnLeft, TwoColumnRight, TwoPageLeft, TwoPageRight}
1790 { \pdfmanagement_add:nne {Catalog} { PageLayout }{/#1 } }
1791 ,pdfpagelayout / .code:n =
1792 { \pdfmanagement_remove:nn {Catalog} { PageLayout } }
1793 ,pdfpagelayout / unknown .code:n =
1794 {
1795     \msg_warning:nnee { hyp } { unknown-choice+empty }
1796     { pdfpagelayout }
1797     { SinglePage, OneColumn, TwoColumnLeft, TwoColumnRight, TwoPageLeft, TwoPageRight }
1798     { \exp_not:n {#1} }

```

```

1799     }
1800 ,pdfpagemode .choices:nn =
1801   { UseNone, UseOutlines, UseThumbs, FullScreen, UseOC } %pdf 1.5
1802   { \pdfmanagement_add:nne {Catalog} { PageMode }{ /#1 } }
1803 ,pdfpagemode / UseAttachments .code:n =
1804   {
1805     \pdf_version_compare:NnTF > {1.5}
1806     {
1807       \pdfmanagement_add:nne {Catalog} { PageMode }{ /UseAttachments }
1808     }
1809     {
1810       \msg_warning:nnee
1811         {hyp}
1812         {ignore-deprecated-or-unknown-value-in-pdf-version}
1813         {UseAttachments}
1814         {\pdf_version:}
1815     }
1816   }
1817 ,pdfpagemode .initial:n = { UseOutlines } %for now ...
1818 ,pdfpagemode / unknown .code:n =
1819   {
1820     \msg_warning:nneee { hyp } { unknown-choice+empty }
1821     { pdfpagemode }
1822     { UseNone, UseOutlines, UseThumbs, FullScreen, UseOC, UseAttachments (PDF 1.6) }
1823     { \exp_not:n {#1} }
1824   }
1825 ,pdfpagescrop .code:n =
1826   {
1827     \tl_if_empty:nTF {#1} %or blank?
1828     {
1829       \pdfmanagement_remove:nn {Pages} { CropBox }
1830     }
1831     {
1832       \pdfmanagement_add:nne {Pages} { CropBox } { [#1] }
1833     }
1834   }
1835 ,pdfpicktraybypdfsize .choice:
1836 ,pdfpicktraybypdfsize / true .code:n =
1837   {
1838     \pdf_version_compare:NnTF > {1.6}
1839     {
1840       \pdfmanagement_add:nnn {Catalog / ViewerPreferences }
1841         { PickTrayByPDFSize } { true }
1842     }
1843     {
1844       \msg_warning:nnee
1845         {hyp}
1846         {ignore-deprecated-or-unknown-option-in-pdf-version}
1847         {pdfpicktraybypdfsize}
1848         {\pdf_version:}
1849     }
1850   }
1851 ,pdfpicktraybypdfsize / false .code:n =
1852   {

```

```

1853     \pdf_version_compare:NnTF > {1.6}
1854     {
1855         \pdfmanagement_add:nnn {Catalog / ViewerPreferences }
1856         { PickTrayByPDFSize } { false }
1857     }
1858     {
1859         \msg_warning:nnee
1860         {hyp}
1861         {ignore-deprecated-or-unknown-option-in-pdf-version}
1862         {pdfpicktraybypdfsize}
1863         {\pdf_version:}
1864     }
1865 }
1866 ,pdfpicktraybypdfsize / .code:n =
1867 {
1868     \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { PickTrayByPDFSize }
1869 }
1870 ,pdfpicktraybypdfsize / unknown .code:n =
1871 {
1872     \msg_warning:nnee { hyp } { no-bool }
1873     { picktraybypdfsize }
1874     { \exp_not:n {#1} }
1875 }
1876 ,pdfprintarea .choices:nn =
1877 { MediaBox, CropBox, BleedBox, TrimBox, ArtBox }
1878 {
1879     \pdf_version_compare:NnTF < {2.0}
1880     {
1881         \pdfmanagement_add:nne {Catalog / ViewerPreferences }
1882         { PrintArea } { /#1 }
1883     }
1884     {
1885         \msg_warning:nnee
1886         {hyp}
1887         {ignore-deprecated-or-unknown-option-in-pdf-version}
1888         {pdfprintarea}
1889         {\pdf_version:}
1890     }
1891 }%
1892 ,pdfprintarea / .code:n =
1893 { \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { PrintArea } }
1894 ,pdfprintarea / unknown .code:n =
1895 {
1896     \msg_warning:nneee { hyp } { unknown-choice+empty }
1897     { pdfprintarea }
1898     { MediaBox, CropBox, BleedBox, TrimBox, ArtBox }
1899     { \exp_not:n {#1} }
1900 }
1901 ,pdfprintclip .choices:nn =
1902 { MediaBox, CropBox, BleedBox, TrimBox, ArtBox }
1903 {
1904     \pdf_version_compare:NnTF < {2.0}
1905     {
1906         \pdfmanagement_add:nne {Catalog / ViewerPreferences }

```

```

1907         { PrintClip } { /#1 }
1908     }
1909     {
1910         \msg_warning:nnee
1911         {hyp}
1912         {ignore-deprecated-or-unknown-option-in-pdf-version}
1913         {pdfprintclip}
1914         {\pdf_version:}
1915     }
1916 }%
1917 ,pdfprintclip / .code:n =
1918 {
1919     \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { PrintClip }
1920 }
1921 ,pdfprintclip / unknown .code:n =
1922 {
1923     \msg_warning:nneee
1924     { hyp }
1925     { unknown-choice+empty }
1926     { pdfprintclip }
1927     { MediaBox, CropBox, BleedBox, TrimBox, ArtBox }
1928     { \exp_not:n {#1} }
1929 }
1930 ,pdfprintpagerange .code:n =
1931 {
1932     \pdf_version_compare:NnTF > {1.6}
1933     {
1934         \tl_if_empty:nTF { #1}
1935         {
1936             \pdfmanagement_remove:nn {Catalog / ViewerPreferences }
1937             { PrintPageRange }
1938         }
1939         {
1940             \pdfmanagement_add:nne {Catalog / ViewerPreferences }
1941             {PrintPageRange}{[#1]}
1942         }
1943     }
1944     {
1945         \msg_warning:nnee
1946         {hyp}
1947         {ignore-deprecated-or-unknown-option-in-pdf-version}
1948         {pdfprintpagerange}
1949         {\pdf_version:}
1950     }
1951 }
1952 ,pdfprintscaling .choices:nn =
1953 { None, AppDefault }
1954 {
1955     \pdf_version_compare:NnTF > {1.5}
1956     {
1957         \pdfmanagement_add:nne {Catalog / ViewerPreferences }
1958         { PrintScaling } { /#1 }
1959     }
1960     {

```

```

1961         \msg_warning:nnee
1962         {hyp}
1963         {ignore-deprecated-or-unknown-option-in-pdf-version}
1964         {pdfprintscaling}
1965         {\pdf_version:}
1966     }
1967 }%
1968 ,pdfprintscaling / .code:n =
1969 {
1970     \pdfmanagement_remove:nn {Catalog / ViewerPreferences } {PrintScaling }
1971 }
1972 ,pdfprintscaling / unknown .code:n =
1973 {
1974     \msg_warning:nneee { hyp } { unknown-choice+empty }
1975     { pdfprintarea }
1976     { None, AppDefault }
1977     { \exp_not:n {#1} }
1978 }
1979 ,pdfremotestartview .code:n =
1980 {
1981     \tl_set:Ne \l__hyp_tmpa_tl {#1~null~null~null~}
1982     \exp_args:NNV
1983     \regex_extract_once:NnNTF \c__hyp_dest_startview_regex \l__hyp_tmpa_tl \l__hyp_tmpa_
1984     {
1985         \tl_set:Ne \l__hyp_dest_pdfremotestartview_tl {\seq_item:Nn \l__hyp_tmpa_seq {1}}
1986     }
1987     {
1988         \msg_warning:nnnn {hyp}{invalid-destination-value}{#1}{pdfremotestartview}
1989         \tl_set:Nn \l__hyp_dest_pdfremotestartview_tl {Fit}
1990     }
1991 }
1992 ,pdfremotestartview .initial:n = {Fit}
1993 % pdfstartpage is special as it shares code with pdfstartview
1994 ,pdfstartpage .code:n =
1995 {
1996     \tl_gset:Ne \g__hyp_dest_pdfstartpage_tl { #1 }
1997     \bool_if:nTF
1998     { \tl_if_empty_p:N \g__hyp_dest_pdfstartpage_tl || \tl_if_empty_p:N \g__hyp_dest_pd
1999     {
2000         \pdfmanagement_remove:nn {Catalog} { OpenAction }
2001     }
2002     {
2003         \pdfmanagement_add:nne {Catalog} { OpenAction }
2004         {
2005             [\pdf_pageobject_ref:n {\g__hyp_dest_pdfstartpage_tl}~/\g__hyp_dest_pdfstartv
2006         }
2007     }
2008 }
2009 ,pdfstartpage .initial:n =1
2010 ,pdfstartview .code:n =
2011 {
2012     \tl_set:Ne \l__hyp_tmpa_tl {#1~null~null~null~}
2013     \exp_args:NNV
2014     \regex_extract_once:NnNTF \c__hyp_dest_startview_regex \l__hyp_tmpa_tl \l__hyp_tmpa_

```

```

2015     {
2016     \tl_gset:Ne \g__hyp_dest_pdfstartview_tl {\seq_item:Nn \l__hyp_tmpa_seq {1}}
2017     }
2018     {
2019     \msg_warning:nmmm {hyp}{invalid-destination-value}{#1}{pdfstartview}
2020     \tl_gset:Nn \g__hyp_dest_pdfstartview_tl {Fit}
2021     }
2022 \bool_if:nTF
2023 { \tl_if_empty_p:N \g__hyp_dest_pdfstartpage_tl || \tl_if_empty_p:N \g__hyp_dest_pd
2024 {
2025     \pdfmanagement_remove:nn {Catalog} { OpenAction }
2026     }
2027     {
2028     \pdfmanagement_add:nne {Catalog} { OpenAction }
2029     {
2030     [\pdf_pageobject_ref:n {\g__hyp_dest_pdfstartpage_tl}~/\g__hyp_dest_pdfstartv
2031     }
2032     }
2033     }
2034 ,pdfstartview .initial:n = Fit
2035 ,pdftoolbar .choice:
2036 ,pdftoolbar / true .code:n =
2037     {
2038     \pdfmanagement_remove:nn {Catalog / ViewerPreferences} { HideToolbar }
2039     }
2040 ,pdftoolbar / false .code:n =
2041     {
2042     \pdfmanagement_add:nnn {Catalog / ViewerPreferences }
2043     { HideToolbar } { true }
2044     }
2045 ,pdftoolbar / true .code:n =
2046     {
2047     \pdfmanagement_remove:nn {Catalog / ViewerPreferences} { HideToolbar }
2048     }
2049 ,pdftoolbar .default:n = true
2050 ,pdftoolbar / unknown .code:n =
2051     {
2052     \msg_warning:nnee { hyp } { no-bool }
2053     { pdftoolbar }
2054     { \exp_not:n {#1} }
2055     }
2056 % pdfview see below.
2057 ,pdfviewarea .choices:nn =
2058 { MediaBox, CropBox, BleedBox, TrimBox, ArtBox }
2059 {
2060 \pdf_version_compare:NnTF < {2.0}
2061 {
2062     \pdfmanagement_add:nnn {Catalog / ViewerPreferences }
2063     { ViewArea } { /#1 }
2064     }
2065     {
2066     \msg_warning:nnee
2067     {hyp}
2068     {ignore-deprecated-or-unknown-option-in-pdf-version}

```

```

2069         {pdfviewarea}
2070         {\pdf_version:}
2071     }
2072 }%
2073 ,pdfviewarea / .code:n =
2074 {
2075     \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { ViewArea }
2076 }
2077 ,pdfviewarea / unknown .code:n =
2078 {
2079     \msg_warning:nnee { hyp } { unknown-choice+empty }
2080     { pdfviewarea }
2081     { MediaBox, CropBox, BleedBox, TrimBox, ArtBox }
2082     { \exp_not:n {#1} }
2083 }
2084 ,pdfviewclip .choices:nn =
2085 { MediaBox, CropBox, BleedBox, TrimBox, ArtBox }
2086 {
2087     \pdf_version_compare:NnTF < {2.0}
2088     {
2089         \pdfmanagement_add:nnn {Catalog / ViewerPreferences }
2090         { ViewClip } { /#1 }
2091     }
2092     {
2093         \msg_warning:nnee
2094         {hyp}
2095         {ignore-deprecated-or-unknown-option-in-pdf-version}
2096         {pdfviewclip}
2097         {\pdf_version:}
2098     }
2099 }%
2100 ,pdfviewclip / .code:n =
2101 {
2102     \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { ViewClip }
2103 }
2104 ,pdfviewclip / unknown .code:n =
2105 {
2106     \msg_warning:nnee { hyp } { unknown-choice+empty }
2107     { pdfviewclip }
2108     { MediaBox, CropBox, BleedBox, TrimBox, ArtBox }
2109     { \exp_not:n {#1} }
2110 }
2111 ,pdfwindowui .choice:
2112 ,pdfwindowui / true .code:n =
2113 {
2114     \pdfmanagement_remove:nn {Catalog / ViewerPreferences } { HideWindowUI }
2115 }
2116 ,pdfwindowui / false .code:n =
2117 {
2118     \pdfmanagement_add:nnn {Catalog / ViewerPreferences }
2119     { HideWindowUI } { true }
2120 }
2121 ,pdfwindowui / .code:n =
2122 {

```

```

2123     \pdfmanagement_remove:nn {Catalog / ViewerPreferences } {HideWindowUI }
2124   }
2125   ,pdfwindowui / unknown .code:n =
2126   {
2127     \msg_warning:nnee { hyp } { no-bool }
2128     { pdfwindowui }
2129     { \exp_not:n {#1} }
2130   }
2131   ,pdfwindowui .default:n = true
2132 }

```

`pdfview` (*setup key*) Destination keys. `pdfview` is a bit more complicated so extra.

```

2133 \keys_define:nn { hyp }
2134 {
2135   ,pdfview .code:n =
2136   {
2137     \seq_set_split:Nnn \l__hyp_tmpa_seq {~}{#1}
2138     \str_case_e:nmF { \str_lowercase:f{ \seq_item:Nn \l__hyp_tmpa_seq {1} } }
2139     {
2140       { xyz }
2141       {
2142         \int_compare:nNnTF {\seq_count:N \l__hyp_tmpa_seq } > { 1 }
2143         {
2144           \seq_get_right:NN \l__hyp_tmpa_seq \l__hyp_tmpa_tl
2145           \tl_if_eq:NnTF \l__hyp_tmpa_tl {null}
2146           {
2147             \tl_set:Nn \l__hyp_dest_pdfview_tl {xyz}
2148           }
2149           {
2150             \tl_set:Ne \l__hyp_dest_pdfview_tl
2151             {
2152               \fp_eval:n { \l__hyp_tmpa_tl * 100 }
2153             }
2154           }
2155         }
2156         {
2157           \tl_set:Nn \l__hyp_dest_pdfview_tl {xyz}
2158         }
2159       }
2160       { fit } { \tl_set:Nn \l__hyp_dest_pdfview_tl {fit} }
2161       { fitb } { \tl_set:Nn \l__hyp_dest_pdfview_tl {fitb} }
2162       { fitbh } { \tl_set:Nn \l__hyp_dest_pdfview_tl {fitbh} }
2163       { fitbv } { \tl_set:Nn \l__hyp_dest_pdfview_tl {fitbv} }
2164       { fith } { \tl_set:Nn \l__hyp_dest_pdfview_tl {fith} }
2165       { fitv } { \tl_set:Nn \l__hyp_dest_pdfview_tl {fitv} }
2166       { fitr }
2167       {
2168         \int_compare:nNnTF {\seq_count:N \l__hyp_tmpa_seq } = {1}
2169         {
2170           \tl_set:Nn \l__hyp_dest_pdfview_tl {fitr}
2171         }
2172         {
2173           %ensure 4 values ...
2174           \tl_set:Nn \l__hyp_dest_pdfview_tl {fitrbox}

```



```

2175         \seq_put_right:Nn \l__hyp_tmpa_seq {0}
2176         \seq_put_right:Nn \l__hyp_tmpa_seq {0}
2177         \seq_put_right:Nn \l__hyp_tmpa_seq {0}
2178         \hbox_set_to_wd:Nnn \l__hyp_dest_box
2179         {
2180             \fp_eval:n
2181             {
2182                 round
2183                 (
2184                     abs
2185                     (
2186                         \seq_item:Nn\l__hyp_tmpa_seq{4}
2187                         -
2188                         (\seq_item:Nn\l__hyp_tmpa_seq{2})
2189                     ),
2190                     3
2191                 )
2192             }bp
2193         }{}
2194         \box_set_dp:Nn \l__hyp_dest_box
2195         {
2196             \fp_eval:n
2197             {
2198                 round(0 - (\seq_item:Nn\l__hyp_tmpa_seq{3}),3)
2199             }bp
2200         }
2201         \box_set_ht:Nn \l__hyp_dest_box
2202         {
2203             \seq_item:Nn\l__hyp_tmpa_seq{5}bp
2204         }
2205     }
2206 }
2207 {
2208 {
2209     \msg_warning:nmmn {hyp}{invalid-destination-value}{#1}{pdfview}
2210     \tl_set:Nn \l__hyp_dest_pdfview_tl {fit}
2211 }
2212 }
2213 ,pdfview .initial:n = {xyz}
2214 }

```

12.3 “MetaData keys”

The following keys are relevant for the metadata: the info dictionary and the xmp-metadata.

pdflang (*setup key*) **pdflang** should be deprecated.

```

2215 \keys_define:nn { hyp }
2216 {
2217     ,pdflang .code:n =
2218     {
2219         \tl_if_empty:nF { #1 }
2220         {
2221             \pdfmanagement_add:nne {Catalog} { Lang } { (#1) }

```

```

2222         \AddToDocumentProperties[document]{lang}{#1}
2223     }
2224 }
2225 }

```

12.3.1 “info keys”

pdfauthor (*setup key*) The keys store their value also in the metadata container, so that hyperxmp can use them.
pdftitle (*setup key*) Creator and Producer can't be removed with the pdfmanagement, but we allow to set an empty value. If the value begin with an optional argument, we assume a multilanguage
pdfcreator (*setup key*) clist and use only the first value. The values are expanded with `\text_expand:n`
pdfsubject (*setup key*)
pdfproducer (*setup key*)
pdfkeywords (*setup key*)

```

2226 \regex_new:N\l__hyp_optlang_regex
2227 \regex_set:Nn\l__hyp_optlang_regex {\A\{([A-Za-z\-\-])+\}\{.*\}}
2228 \cs_generate_variant:Nn\clist_item:nn{on}
2229 \cs_new_protected:Npn \__hyp_setup_info_key:nn #1 #2
2230 {
2231   \keys_define:nn { hyp }
2232   {
2233     pdf#1 .code:n =
2234     {
2235       \tl_set:Ne\l__hyp_tmpa_tl {\text_expand:n{##1}}
2236       \__hyp_store_metadata:no {pdf#1}{\l__hyp_tmpa_tl}
2237       \tl_if_empty:NTF \l__hyp_tmpa_tl
2238       {
2239         \str_case:nnF { #1 }
2240         {
2241           {creator}
2242           {
2243             \msg_info:nnn { hyp }{ empty-info-value } { pdfcreator }
2244             \pdfmanagement_add:nne {Info}{Creator}{()}
2245           }
2246           {producer}
2247           {
2248             \msg_info:nnn { hyp }{ empty-info-value } { pdfproducer }
2249             \pdfmanagement_add:nne {Info}{Producer}{()}
2250           }
2251         }
2252         {
2253           \pdfmanagement_remove:nn {Info}{#2}
2254         }
2255       }
2256     }
2257     \tl_set:Ne\l__hyp_tmpb_tl {\clist_item:on{\l__hyp_tmpa_tl}{1}}
2258     \exp_args:NNV
2259     \regex_extract_once:NnN \l__hyp_optlang_regex \l__hyp_tmpb_tl\l__hyp_tmpa_s
2260     \seq_if_empty:NTF\l__hyp_tmpa_seq
2261     {
2262       \__hyp_text_pdfstring_info:oN {\l__hyp_tmpa_tl}\l__hyp_tmpa_str
2263     }
2264     {
2265       \__hyp_text_pdfstring_info:eN {\seq_item:Nn \l__hyp_tmpa_seq{3}}\l__hyp_t
2266     }
2267     \str_if_eq:VnF\l__hyp_tmpa_str{<FEFF>}

```

```

2268         {
2269             \pdfmanagement_add:nne {Info}{#2}{\l__hyp_tmpa_str}
2270         }
2271     }
2272 }
2273 }
2274 \keys_define:nn { hyp / info }
2275 {
2276     #2 .code:n =
2277     {
2278         \tl_set:Nel__hyp_tmpa_tl {\text_expand:n{##1}}
2279         \__hyp_store_metadata:eo {pdf\str_lowercase:n{#1}}{\l__hyp_tmpa_tl}
2280         \tl_if_blank:nTF {##1}
2281         {
2282             \pdfmanagement_remove:nn {Info}{#2}
2283         }
2284         {
2285             \__hyp_text_pdfstring_info:oN {\l__hyp_tmpa_tl}\l__hyp_tmpa_str
2286             \str_if_eq:VnF\l__hyp_tmpa_str{<FEFF>}
2287             {
2288                 \pdfmanagement_add:nne {Info}{#2}{\l__hyp_tmpa_str}
2289             }
2290         }
2291     }
2292     ,unknown .code:n =
2293     {
2294         \__hyp_text_pdfstring_info:eN {##1}\l__hyp_tmpa_str
2295         \str_if_eq:VnF\l__hyp_tmpa_str{<FEFF>}
2296         {
2297             \exp_args:Nno
2298             \pdfmanagement_add:nne {Info}
2299             { \l_keys_key_str } {\l__hyp_tmpa_str}
2300         }
2301     }
2302 }
2303 }
2304 \__hyp_setup_info_key:nn {author} {Author}
2305 \__hyp_setup_info_key:nn {title} {Title}
2306 \__hyp_setup_info_key:nn {producer} {Producer}
2307 \__hyp_setup_info_key:nn {creator} {Creator}
2308 % ignored key: addtopdfcreator
2309 \__hyp_setup_info_key:nn {subject} {Subject}
2310 \__hyp_setup_info_key:nn {keywords} {Keywords}

```

pdfcreationdate (*setup key*) These keys are not really needed. We store them too in the container. CreationDate and

pdfmoddate (*setup key*) ModDate should not use the hex encoding.

```

pdfmetadate (setup key) 2311 \cs_new_protected:Npn \__hyp_setup_info_date_key:nn #1 #2
2312 {
2313     \keys_define:nn { hyp }
2314     {
2315         pdf#1 .code:n =
2316         {
2317             \tl_if_blank:nTF {##1}
2318             {

```

```

2319         \pdfmanagement_remove:nn {Info}{#2}
2320     }
2321     {
2322         \pdfmanagement_add:nne {Info}{#2}{##1}
2323     }
2324     \__hyp_store_metadata:nn {pdf#1}{##1}
2325     \AddToDocumentProperties[document]{#1}{##1}
2326 }
2327 }
2328 \keys_define:nn { hyp / info }
2329 {
2330     #2 .code:n =
2331     {
2332         \tl_if_blank:nTF {##1}
2333         {
2334             \pdfmanagement_remove:nn {Info}{#2}
2335         }
2336         {
2337             \pdfmanagement_add:nne {Info}{#2}{##1}
2338         }
2339         \exp_args:Nne \__hyp_store_metadata:nn {pdf\str_lowercase:n{#1}}{##1}
2340     }
2341 }
2342 }
2343
2344 \__hyp_setup_info_date_key:nn {creationdate} {CreationDate}
2345 \__hyp_setup_info_date_key:nn {moddate} {ModDate}
2346 \keys_define:nn { hyp }
2347 {
2348     pdfmetadate .code:n = { \__hyp_store_metadata:nn {pdfmetadate}{#1} }
2349 }

```

pdftrapped (*setup key*) Trapped is a bit curious, it has an value `unknown`, and one can't suppress it ...

```

2350 \keys_define:nn { hyp }
2351 {
2352     ,pdftrapped .code:n =
2353     {
2354         \exp_args:Nne
2355         \keys_set:nn { hyp } { _pdftrapped = \str_uppercase:n { #1 } }
2356     }
2357     ,_pdftrapped .choices:nn = {TRUE,FALSE,UNKNOWN}
2358     {
2359         \pdfmanagement_add:nne {Info}{Trapped}
2360         {/
2361             \str_uppercase:f { \str_head:n { #1 } }
2362             \str_lowercase:f { \str_tail:n { #1 } }
2363         }
2364         \__hyp_store_metadata:ne {pdftrapped}
2365         {
2366             \str_uppercase:f { \str_head:n { #1 } }
2367             \str_lowercase:f { \str_tail:n { #1 } }
2368         }
2369     }
2370     ,_pdftrapped / unknown .code:n =

```

```

2371     {
2372     \msg_warning:nneee { hyp } { unknown-choice }
2373     { pdftrapped }
2374     { true~(case-insensitive), false~(case-insensitive), unknown~(case-insensitive) }
2375     { \exp_not:n {#1} }
2376     }
2377 }

```

`pdfinfo` (*setup key*) `pdfinfo` allows to set the info keys with `keyval` ...

```

2378 \keys_define:nn { hyp }
2379 {
2380   pdfinfo .code:n =
2381   {
2382     \keys_set:nn { hyp / info } { #1 }
2383   }
2384 }

```

Now we set some default values

```

2385 \keys_set:nn { hyp} {pdfcreator = LaTeX-with-hyperref}
2386 \keys_set:nn { hyp} {pdfauthor = }
2387 \keys_set:nn { hyp} {pdftitle = }
2388 \keys_set:nn { hyp} {pdfsubject = }

```

12.4 hyperxmp keys

`hyperxmp` defines lots of keys for `\hypersetup`. They now longer work with this driver. So we provide most of them, but they are only stored as metadata:

```

2389 \clist_map_inline:nn
2390 {
2391   ,pdfcopyright
2392   ,pdftype
2393   ,pdflicenseurl
2394   ,pdfauthortitle
2395   ,pdfcaptionwriter
2396   ,pdfmetalang
2397   ,pdfsource
2398   ,pdfdocumentid
2399   ,pdfinstanceid
2400   ,pdfversionid
2401   ,pdfrendition
2402   ,pdfpublication
2403   ,pdfpubtype
2404   ,pdfbytes
2405   ,pdfnumpages
2406   ,pdfissn
2407   ,pdfeissn
2408   ,pdfisbn
2409   ,pdfbookedition
2410   ,pdfpublisher
2411   ,pdfvolumenum
2412   ,pdfissuenum
2413   ,pdfpagerange
2414   ,pdfdoi

```

```

2415 ,pdfurl
2416 ,pdfidentifier
2417 ,pdfsubtitle
2418 ,pdfpubstatus
2419 ,pdfcontactaddress
2420 ,pdfcontactcity
2421 ,pdfcontactregion
2422 ,pdfcontactpostcode
2423 ,pdfcontactcountry
2424 ,pdfcontactphone
2425 ,pdfcontactemail
2426 ,pdfcontacturl
2427 ,pdfdate
2428 }
2429 {
2430 \keys_define:nn { hyp }
2431 {
2432 #1 .code:n= { \__hyp_store_metadata:nn {#1}{##1}}
2433 }
2434 }
2435

```

12.5 Transitions

`pdfpageduration` sets the duration a page is shown in full screen mode.

```

2436 \keys_define:nn { hyp }
2437 {
2438 pdfpageduration .code:n =
2439 {
2440 \tl_if_blank:nTF { #1 }
2441 {
2442 \pdfmanagement_remove:nn {Page}{Dur}
2443 }
2444 {
2445 \pdfmanagement_add:nnn {Page}{Dur}{#1}
2446 }
2447 }
2448 }

```

Transition settings are used by (some) pdf viewers when presenting a pdf in full screen mode. They are added to the page settings and describe the transition from the previous page to current page. Transition setting can be set in the preamble for all pages or in the document for the current and the following pages. Due to the asynchronous page breaking one has to be careful to set it on the right page, e.g. only after a `\newpage`. The generic driver uses a different syntax than the other `hyperref` drivers: various transition options can be set by a keyval syntax in the value of `pdfpagetransition`. A typical setting looks e.g. like this

```
\hypersetup{pdfpagetransition={style=Fly,duration=2,direction=90,opaque=false}}
```

The keys allowed in the argument of `pdfpagetransition` are

style one of Split, Blinds, Box, Wipe,
 Dissolve, Glitter, R, Fly, Push, Cover,
 Uncover, Fade
 duration a number, describes the duration of
 the transition
 direction H (horizontal, only Split, Blinds)
 V (vertical, only Split, Blinds)
 0 (left to right, only Wipe, Glitter, Fly, Cover, Uncover, Push)
 90 (bottom to top, only Wipe)
 180 (right to left, only Wipe)
 270 (top to bottom, only Wipe, Glitter, Fly, Cover, Uncover, Push)
 315 (top left to bottom, only Glitter)
 None (only Fly)
 motion one of I, O, only relevant for Split, Box
 and Fly
 scale a number, only relevant for Fly style
 opaque true or false, only relevant for Fly style

```

2449 \keys_define:nn { hyp }
2450 {
2451   pdfpagetransition .code:n =
2452   {
2453     \tl_if_blank:nTF {#1}
2454     {
2455       \pdfmanagement_remove:nn {Page}{Trans}
2456     }
2457     {
2458       \group_begin:
2459       \keys_set:nn { hyp / trans }{style=R,#1}
2460       \pdf_object_unnamed_write:ne { dict }
2461       {
2462         \pdfdict_use:n {l__hyp_page/Trans}
2463       }
2464       \pdfmanagement_add:nne {Page}{Trans}{\pdf_object_ref_last:}
2465       \group_end:
2466     }
2467   }
2468 }
2469 \keys_define:nn { hyp / trans }
2470 {
2471   ,style .choices:nn =
2472   {Split,Blinds,Box,Wipe,Dissolve,Glitter,R,Fly,Push,Cover,Uncover,Fade}
2473   { \pdfdict_put:nnn {l__hyp_page/Trans}{ S }{/#1} }
2474   ,style / unknown .code:n =
2475   {
2476     \msg_warning:nnee { hyp } { unknown-choice }
2477     { trans / style }
2478     { Split,Blinds,Box,Wipe,Dissolve,Glitter,R,Fly,Push,Cover,Uncover,Fade }
2479     { \exp_not:n {#1} }
2480   }
2481   ,duration .code:n =
2482   {
2483     \pdfdict_put:nnn {l__hyp_page/Trans}{ D }{/#1}
  
```

```

2484     }
2485 ,direction .choices:nn =
2486   {H,V}
2487   { \pdfdict_put:nnn {l__hyp_page/Trans}{ Dm }{/#1} }
2488 ,direction .choices:nn =
2489   {0,90,180,270,315}
2490   { \pdfdict_put:nnn {l__hyp_page/Trans}{ Di }{ #1 } }
2491 ,direction / None .code:n =
2492   { \pdfdict_put:nnn {l__hyp_page/Trans}{ Di }{ /None } }
2493 ,direction / unknown .code:n =
2494   {
2495     \msg_warning:nneee { hyp } { unknown-choice }
2496     { trans / direction }
2497     {
2498       H~(horizontal,~only~Split,~Blinds),
2499       V~(vertical,~only~Split,~Blinds),
2500       0~(left~to~right,~only~Wipe,~Glitter,~Fly,~Cover,~Uncover,~Push),
2501       90~(bottom~to~top,~only~Wipe),
2502       180~(right~to~left,~only~Wipe),
2503       270~(top~to~bottom,~only~Wipe,~Glitter,~Fly,~Cover,~Uncover,~Push),
2504       315~(top~left~to~bottom,~only~Glitter),
2505       None~(only~Fly)
2506     }
2507     { \exp_not:n {#1} }
2508   }
2509 ,motion .choices:nn =
2510   {I,0}
2511   { \pdfdict_put:nnn {l__hyp_page/Trans}{ M }{/#1} }
2512 ,motion / unknown .code:n =
2513   {
2514     \msg_warning:nneee { hyp } { unknown-choice }
2515     { trans / motion }
2516     { I~(inwards) , 0~(outwards) }
2517     { \exp_not:n {#1} }
2518   }
2519 ,scale .code:n =
2520   { \pdfdict_put:nnn { l__hyp_page/Trans }{ SS }{ #1 } }
2521 ,opaque .choices:nn = {true,false}
2522   { \pdfdict_put:nnn { l__hyp_page/Trans }{ B }{ #1 } }
2523 ,opaque / unknown .code:n =
2524   {
2525     \msg_warning:nneee { hyp } { unknown-choice }
2526     { trans / B }
2527     { true~(opaque~back,~only~Fly), false~(opaque~back,~only~Fly) }
2528     { \exp_not:n {#1} }
2529   }
2530 % try to set unknown keys as style
2531 ,unknown .code:n =
2532   {
2533     % warning ...
2534     \exp_args:Nne\keys_set:nn {hyp/trans}{ style=\l_keys_key_str }
2535   }
2536 }

```


Finally we process the package option list, to get most keys working

```

2537 \keys_set_known:nv{ hyp }{opt@hyperref.sty}
    Unfinished, from here on @@ notation is disabled Form field code
2538 <@@=)
2539 \NewDocumentCommand \MakeFieldObject { m m }
2540 {
2541   \pdfxform_new:nnn { #2 }{ } { #1 }
2542 }
2543
2544
2545 \prop_new:N \g__hyp_AcroForm_CoFields_prop
2546 \prop_new:N \g__hyp_AcroForm_Fields_prop
2547
2548 \let\HyField@afields\@empty
2549 \let\HyField@cofields\@empty
2550 \def\HyField@AfterAuxOpen{\Hy@AtBeginDocument}%
2551
2552 % the value doesn't matter, but with a prop we avoid duplicates and it is
2553 % clearly faster than removing them from a sequence
2554 \def\HyField@AuxAddToFields#1
2555 {
2556   \prop_gput:Nnn \g__hyp_AcroForm_Fields_prop {#1}{F}
2557 }%
2558
2559 %fields with empty key get a value too -- lets hope that
2560 %this give the expected behaviour
2561 \def\HyField@AuxAddToCoFields #1 #2
2562 {
2563   \prop_gput:Nnn \g__hyp_AcroForm_CoFields_prop {a#1}{#2}
2564 }
2565
2566 \Hy@AtBeginDocument
2567 {
2568   \if@filesw
2569     \immediate\write\@mainaux{%
2570       \string\providecommand\string\HyField@AuxAddToFields[1]{}%
2571     }%
2572     \immediate\write\@mainaux{%
2573       \string\providecommand\string\HyField@AuxAddToCoFields[2]{}%
2574     }%
2575   \fi
2576   \let\HyField@AfterAuxOpen\@firstofone
2577 }%
2578
2579 \def\HyField@AddToFields
2580 {
2581   \exp_args:N\HyField@@AddToFields
2582   {
2583     \pdfannot_box_ref_last:
2584   }
2585   \ifx\Fld@calculate@code\@empty
2586   \else
2587     \begingroup

```

```

2588     \Hy@safe@activestru
2589     \edef\Hy@temp{%
2590         \endgroup
2591         \if@filesw
2592             \write\@mainaux
2593             {
2594                 \string\HyField@AuxAddToCoFields
2595                 {
2596                     \Fld@calculate@sortkey
2597                 }
2598                 {
2599                     \pdfannot_box_ref_last:
2600                 }
2601             }
2602         \fi
2603     }%
2604     \Hy@temp
2605 \fi
2606 }%
2607
2608 \def\HyField@@AddToFields#1{
2609     \HyField@AfterAuxOpen{%
2610         \if@filesw
2611             \write\@mainaux{%
2612                 \string\HyField@AuxAddToFields{#1}%
2613             }%
2614         \fi
2615     }%
2616 }%
2617
2618 \ExplSyntaxOff
2619 \ExplSyntaxOn
2620
2621 \def\@Form[#1]
2622 {
2623     \kvsetkeys{Form}{#1}
2624     \pdf@ifdraftmode{}
2625     {
2626         \Hy@FormObjects
2627         \prop_map_inline:Nn \g__hyp_AcroForm_Fields_prop
2628         {
2629             \pdfmanagement_add:nne { Catalog / AcroForm } { Fields }{##1}
2630             %\pdfmanagement_show:n { Catalog / AcroForm }
2631         }
2632         \prop_if_empty:NF \g__hyp_AcroForm_CoFields_prop
2633         {
2634             \prop_map_inline:Nn \g__hyp_AcroForm_CoFields_prop
2635             {
2636                 \seq_put_right:Nn \l__hyp_tmpa_seq {##1}
2637             }
2638             \seq_sort:Nn \l__hyp_tmpa_seq
2639             {
2640                 \str_compare:nNnTF {##1} > {##2}
2641                 { \sort_return_swapped: }

```

```

2642         { \sort_return_same: }
2643     }
2644     \seq_map_inline:Nn \l__hyp_tmpa_seq
2645     {
2646         \pdfmanagement_add:nne { Catalog / AcroForm }
2647         { CO }
2648         {
2649             \prop_item:Nn \g__hyp_AcroForm_CoFields_prop {##1}
2650         }
2651     }
2652 }
2653 \pdfmanagement_add:nne {Catalog / AcroForm/DR/Font }
2654 {ZaDb} {\pdf_object_ref:n {__hyp/Font/ZaDb} }
2655 \pdfmanagement_add:nne {Catalog / AcroForm/DR/Font }
2656 {Helv} {\pdf_object_ref:n {__hyp/Font/Helv} }
2657 \pdfmanagement_add:nne {Catalog /AcroForm}
2658 {DA}{(/Helv~10~Tf~0~g)}
2659 \pdfmeta_standard_verify:nTF {form_no_NeedAppearances}
2660 {
2661     \legacy_if:nT { HyField@NeedAppearances }
2662     {
2663         \pdfmanagement_add:nnn {Catalog / AcroForm }{NeedAppearances}{true}
2664     }
2665 }
2666 {
2667     \pdfmanagement_remove:nn {Catalog / AcroForm }{NeedAppearances}
2668 }
2669 }
2670 }
2671 \ExplSyntaxOff
2672 \let\@endForm\@empty
2673 \let\HyAnn@AbsPageLabel\@empty
2674 \let\Fld@pageobjref\@empty
2675
2676 \ExplSyntaxOn
2677 \newcount\HyAnn@Count
2678 \HyAnn@Count=\z@
2679 \def\HyAnn@AbsPageLabel
2680 {
2681     \global\advance\HyAnn@Count by\@ne
2682     \__hyp_property_record:ee {HyAnn@\the\HyAnn@Count}{abspage}
2683     \property_ref_undefined_warn:ee {HyAnn@\the\HyAnn@Count}{abspage}
2684 }%
2685 \prg_generate_conditional_variant:Nnn \property_if_recorded:nn {ee} {T}
2686 \def\Fld@pageobjref
2687 {
2688     \property_if_recorded:eeT {HyAnn@\the\HyAnn@Count}{abspage}
2689     {
2690         /P~\pdf_pageobject_ref:e
2691         {
2692             \property_ref:ee{HyAnn@\the\HyAnn@Count}{abspage}
2693         }
2694     }
2695 }

```

```

2696 %% check if the attr should be set through
2697 %% hooks.
2698 %% check if options are missing.
2699 \def\@TextField[#1]#2{% parameters, label
2700   \def\Fld@name{#2}%
2701   \let\Fld@default\@empty
2702   \let\Fld@value\@empty
2703   \def\Fld@width{\DefaultWidthofText}%
2704   \def\Fld@height{%
2705     \ifFld@multiline
2706       \DefaultHeightofTextMultiline
2707     \else
2708       \DefaultHeightofText
2709     \fi
2710   }%
2711 \begingroup
2712   \expandafter\HyField@SetKeys\expandafter{%
2713     \DefaultOptionsofText,#1%
2714   }%
2715   \PDFForm@Name
2716   \HyField@FlagsText
2717   \ifFld@hidden\def\Fld@width{1sp}\fi
2718   \ifx\Fld@value\@empty\def\Fld@value{\Fld@default}\fi
2719   \LayoutTextField{#2}{%
2720     \leavevmode
2721     \HyAnn@AbsPageLabel
2722     \Hy@escapeform\PDFForm@Text
2723     \pdfannot_box:nnnn
2724       {\Fld@width}
2725       {\Fld@height}
2726       {0pt} %is this correct?
2727       {\PDFForm@Text}
2728     \MakeTextField{\Fld@width}{\Fld@height}
2729     \HyField@AddToFields
2730   }%
2731 \endgroup
2732 }
2733 \providecommand\@curropt{}
2734 \def\@ChoiceMenu[#1]#2#3{% parameters, label, choices
2735   \def\Fld@name{#2}
2736   \let\Fld@default\relax
2737   \let\Fld@value\relax
2738   \def\Fld@width{\DefaultWidthofChoiceMenu}
2739   \def\Fld@height{\DefaultHeightofChoiceMenu}
2740 \begingroup
2741   \Fld@menulength=0 %
2742   \@tempdima\z@
2743   \clist_map_variable:nNn { #3 } \@curropt
2744   %\@for\@curropt:=#3\do
2745   {%
2746     \expandafter\Fld@checkequals\@curropt==\%
2747     \Hy@StepCount\Fld@menulength
2748     \settowidth{\@tempdimb}{\@currDisplay}%
2749     \ifdim\@tempdimb>\@tempdima\@tempdima\@tempdimb\fi

```

```

2750     }%
2751     \advance\@tempdima by~15\p@
2752     \begingroup
2753     \HyField@SetKeys{#1}
2754     \edef\x{\endgroup
2755     \noexpand\expandafter
2756     \noexpand\HyField@SetKeys
2757     \noexpand\expandafter{%
2758     \expandafter\noexpand\cname DefaultOptionsof%
2759     \ifFld@radio
2760     Radio%
2761     \else
2762     \ifFld@combo
2763     \ifFld@popdown
2764     PopdownBox%
2765     \else
2766     ComboBox%
2767     \fi
2768     \else
2769     ListBox%
2770     \fi
2771     \fi
2772     \endcsname
2773     }%
2774     }\x
2775     \HyField@SetKeys{#1}%
2776     \PDFForm@Name
2777     \ifFld@hidden\def\Fld@width{1sp}\fi
2778     \ifx\Fld@value\relax
2779     \let\Fld@value\Fld@default
2780     \fi
2781     \LayoutChoiceField{#2}{%
2782     \ifFld@radio
2783     \HyField@FlagsRadioButton
2784     \@Radio{#3}%
2785     \else
2786     \begingroup
2787     \HyField@FlagsChoice
2788     \ifdim\Fld@width<\@tempdima
2789     \ifdim\@tempdima<1cm\@tempdima1cm\fi
2790     \edef\Fld@width{\the\@tempdima}%
2791     \fi
2792     \ifFld@combo
2793     \else
2794     \@tempdima=\the\Fld@menulength\Fld@charsize
2795     \advance\@tempdima by~\Fld@borderwidth bp %
2796     \advance\@tempdima by~\Fld@borderwidth bp %
2797     \edef\Fld@height{\the\@tempdima}%
2798     \fi
2799     \@ListBox{#3}%
2800     \endgroup
2801     \fi
2802     }%
2803     \endgroup

```

```

2804 }
2805
2806 \def\@@Radio#1{%
2807   \Fld@listcount=0-%
2808   \EdefEscapeName\Fld@default{\Fld@default}%
2809   \clist_map_variable:nNn { #1 } \@curopt
2810   {%
2811     \expandafter\Fld@checkequals\@curopt==\%
2812     \EdefEscapeName\@currValue{\@currValue}%
2813     \Hy@StepCount\Fld@listcount
2814     \@currDisplay\space
2815     \leavevmode
2816     \HyAnn@AbsPageLabel
2817     \Hy@escapeform\PDFForm@Radio
2818     \pdfxform_if_exist:nF { __hyp_xform_Ding }
2819     {
2820       \pdfxform_new:nnn { __hyp_xform_Ding } {}
2821       {
2822         \group_begin:
2823         \fontfamily{pzd}
2824         \fontencoding{U}
2825         \fontseries{m}
2826         \fontshape{n}
2827         \selectfont
2828         \char123
2829         \group_end:
2830       }
2831     }
2832     \pdfannot_box:nnne
2833     {\Fld@width}
2834     {\Fld@height}
2835     {Opt} %is this correct?
2836     {
2837       \PDFForm@Radio
2838       /AP
2839       <<
2840       /N
2841       <<
2842       /\@currValue\c_space_tl \pdfxform_ref:n {__hyp_xform_Ding}
2843       %/Off \c_space_tl \pdfxform_ref:n {__hyp_xform_DingOff} %hm
2844       >>
2845     }
2846     {\fbox{ \MakeRadioField{\Fld@width}{\Fld@height}} }
2847     \int_compare:nNnT { \Fld@listcount } = { 1 }
2848     { \HyField@AddToFields }
2849     \c_space_tl % deliberate space between radio buttons
2850     % to do: --> should be configurable
2851   }%
2852 }
2853
2854
2855 \newcount\Fld@listcount
2856 \def\@@ListBox#1
2857 {

```

```

2858 \HyField@PDFChoices{#1}
2859 \mode_leave_vertical:
2860 \HyAnn@AbsPageLabel
2861 \Hy@escapeform\PDFForm@List
2862 \pdfannot_box:nnnn
2863   {\Fld@width}{\Fld@height}{0pt}
2864   {\PDFForm@List}
2865 \MakeChoiceField{\Fld@width}{\Fld@height}
2866 \HyField@AddToFields
2867 }
2868
2869
2870 \def\@PushButton[#1]#2{% parameters, label
2871 \def\Fld@name{#2}%
2872 \group_begin:
2873   \exp_args:No\HyField@SetKeys
2874   {
2875     \DefaultOptionsofPushButton,#1
2876   }
2877   \PDFForm@Name
2878   \pdfmeta_standard_verify:nnTF {annot_action_A}{JavaScript}
2879   {
2880     \HyField@FlagsPushButton
2881     \legacy_if:nT {Fld@hidden}
2882     {
2883       \def\Fld@width{1sp}
2884     }
2885     \LayoutPushButtonField
2886     {
2887       \mode_leave_vertical:
2888       \HyAnn@AbsPageLabel
2889       \Hy@escapeform\PDFForm@Push
2890       \hbox_set:Nn \l_tmpa_box { \MakeButtonField {#2}}
2891       \pdfannot_box:nnnn
2892         {\box_wd:N\l_tmpa_box}
2893         {\box_ht:N\l_tmpa_box}
2894         {\box_dp:N\l_tmpa_box} %is this correct?
2895         {\PDFForm@Push}
2896         {\box_use:N\l_tmpa_box}
2897       \HyField@AddToFields
2898     }
2899   }
2900   {
2901     \msg_error:nn { hyp }{ pdfa-no-push-button }
2902     \LayoutPushButtonField
2903     {
2904       \mode_leave_vertical:
2905       \MakeButtonField{#2}
2906     }
2907   }
2908 \group_end:
2909 }
2910
2911 \def\@Submit[#1]#2

```

```

2912 {
2913   \def\Fld@width {\DefaultWidthofSubmit}
2914   \def\Fld@height{\DefaultHeightofSubmit}
2915   \group_begin:
2916     \exp_args:No\HyField@SetKeys
2917     {
2918       \DefaultOptionsofSubmit,#1
2919     }
2920   \HyField@FlagsPushButton
2921   \HyField@FlagsSubmit
2922   \legacy_if:nT { Fld@hidden }
2923   {
2924     \def\Fld@width{1sp}
2925   }
2926   \mode_leave_vertical:
2927   \HyAnn@AbsPageLabel
2928   \Hy@escapeform\PDFForm@Submit
2929   \hbox_set:Nn \l_tmpa_box { \MakeButtonField {#2}}
2930   \pdfxform_if_exist:nF
2931   { __hyp_xform_Submit }
2932   {
2933     \pdfxform_new:nnn { __hyp_xform_Submit }{}
2934     {
2935       \fbox{\color_select:n{yellow}\textsf{Submit}}
2936     }
2937     \pdfxform_new:nnn { __hyp_xform_SubmitP }{}
2938     {
2939       \fbox{\color_select:n{yellow}\textsf{SubmitP}}
2940     }
2941   }
2942   \pdfannot_box:nnnn
2943   {\box_wd:N\l_tmpa_box}
2944   {\box_ht:N\l_tmpa_box}
2945   {\box_dp:N\l_tmpa_box} %is this correct?
2946   {
2947     \PDFForm@Submit
2948     /AP<<
2949     /N~\pdfxform_ref:n {__hyp_xform_Submit}~
2950     /D~\pdfxform_ref:n {__hyp_xform_SubmitP}
2951     >>
2952   }
2953   \HyField@AddToFields
2954   \box_use:N\l_tmpa_box
2955
2956   \group_end:
2957 }
2958
2959 \def\@Reset[#1]#2
2960 {
2961   \def\Fld@width {\DefaultWidthofReset}
2962   \def\Fld@height{\DefaultHeightofReset}
2963   \group_begin:
2964     \exp_args:No\HyField@SetKeys
2965     {

```



```

2966     \DefaultOptionsofReset,#1
2967   }
2968   \mode_leave_vertical:
2969   \pdfmeta_standard_verify:nnTF {annot_action_A}{ResetForm}
2970   {
2971     \HyField@FlagsPushButton
2972     \legacy_if:nT { Fld@hidden }
2973     { \def\Fld@width{1sp} }
2974     \HyAnn@AbsPageLabel
2975     \Hy@escapeform\PDFForm@Reset
2976     \hbox_set:Nn \l_tmpa_box { \MakeButtonField {#2}}
2977     \pdfannot_box:nnnn
2978     {\box_wd:N\l_tmpa_box}
2979     {\box_ht:N\l_tmpa_box}
2980     {\box_dp:N\l_tmpa_box} %is this correct?
2981     { \PDFForm@Reset }
2982     \HyField@AddToFields
2983     \box_use:N \l_tmpa_box
2984   }
2985   {
2986     \msg_error:nn { hyp }{ pdfa-no-reset-button }
2987     \MakeButtonField{#2}
2988   }
2989   \group_end:
2990 }
2991
2992 \def\@CheckBox[#1]#2
2993 {% parameters, label
2994   \def\Fld@name{#2}
2995   \def\Fld@default{0}
2996   \group_begin:
2997     \def\Fld@width {\DefaultWidthofCheckBox}
2998     \def\Fld@height{\DefaultHeightofCheckBox}
2999     \exp_args:No\HyField@SetKeys
3000     {
3001       \DefaultOptionsofCheckBox,#1
3002     }
3003     \PDFForm@Name
3004     \HyField@FlagsCheckBox
3005     \legacy_if:nT { Fld@hidden }
3006     {
3007       \def\Fld@width{1sp}
3008     }
3009     \LayoutCheckField{#2}
3010     {
3011       \mode_leave_vertical:
3012       \HyAnn@AbsPageLabel
3013       \Hy@escapeform\PDFForm@Check
3014       \pdfxform_if_exist:nF { __hyp_xform_CheckMarkYes }
3015       {
3016         \pdfxform_new:nnn
3017         {__hyp_xform_CheckMarkYes}{-}
3018         {
3019           \group_begin:

```

```

3020         \fontfamily{pzd}
3021         \fontencoding{U}
3022         \fontseries{m}
3023         \fontshape{n}
3024         \selectfont
3025         \char51
3026         \group_end:
3027     }
3028     \pdfxform_new:nnn
3029     {\_hyp_xform_CheckMarkOff}{ }
3030     {
3031         \group_begin:
3032         \fontfamily{pzd}
3033         \fontencoding{U}
3034         \fontseries{m}
3035         \fontshape{n}
3036         \selectfont
3037         \phantom{\char51} %perhaps xetex needs some small glyph ..
3038         \group_end:
3039     }
3040 }
3041 \pdfannot_box:nnnn
3042   {\Fld@width}
3043   {\Fld@height}
3044   {Opt} %is this correct?
3045   {\PDFForm@Check}
3046   \HyField@AddToFields %check if this works with xelatex ...
3047 }
3048 \group_end:
3049 }
3050 %hm. Should a luatex driver use type1 fonts in fields????
3051 \def\Hy@FormObjects
3052 {
3053   \pdf_object_new:n   {\_hyp/Encoding/pdfdoc }
3054   \pdf_object_new:n   {\_hyp/Font/ZaDb }
3055   \pdf_object_new:n   {\_hyp/Font/Helv }
3056   \pdf_object_write:nne {\_hyp/Encoding/pdfdoc } { dict }
3057   {
3058     /Type/Encoding
3059     /Differences[
3060       24/breve/caron/circumflex/dotaccent/hungarumlaut/ogonek
3061       /ring/tilde
3062       \c_space_tl
3063       39/quotesingle
3064       \c_space_tl
3065       96/grave %
3066       \iow_newline:
3067       128/bullet/dagger/daggerdbl/ellipsis/emdash/endash/florin
3068       /fraction/guilsinglleft/guilsinglright/minus/perthousand
3069       /quotedblbase/quotedblleft/quotedblright/quoteleft
3070       /quoteright/quotesinglbase/trademark/fi/fl/Lslash/OE
3071       /Scaron/Ydieresis/Zcaron/dotlessi/lslash/oe/scaron/zcaron
3072       \iow_newline:
3073       164/currency

```

```

3074     \c_space_tl
3075     166/brokenbar
3076     \c_space_tl
3077     168/dieresis/copyright/ordfeminine
3078     \c_space_tl
3079     172/logicalnot/.notdef/registered/macron/degree/plusminus
3080     /twosuperior/threesuperior/acute/mu
3081     \c_space_tl
3082     183/periodcentered/cedilla/onesuperior/ordmasculine
3083     \c_space_tl
3084     188/onequarter/onehalf/threequarters
3085     \iow_newline:
3086     192/Agrave/Aacute/Acircumflex/Atilde/Adieresis/Aring/AE
3087     /Ccedilla/Egrave/Eacute/Ecircumflex/Edieresis/Igrave
3088     /Iacute/Icircumflex/Idieresis/Eth/Ntilde/Ograve/Oacute
3089     /Ocircumflex/Otilde/Odieresis/multiply/Oslash/Ugrave
3090     /Uacute/Ucircumflex/Udieresis/Yacute/Thorn/germandbls
3091     /agrave/aacute/acircumflex/atilde/adieresis/aring/ae
3092     /ccedilla/egrave/eacute/ecircumflex/edieresis/igrave
3093     /iacute/icircumflex/idieresis/eth/ntilde/ograde/oacute
3094     /ocircumflex/otilde/odieresis/divide/oslash/ugrave
3095     /uacute/ucircumflex/udieresis/yacute/thorn/ydieresis
3096   ]
3097   }
3098   \pdf_object_write:nnn {__hyp/Font/ZaDb } { dict }
3099   {
3100     /Type/Font
3101     /Subtype/Type1
3102     /Name/ZaDb
3103     /BaseFont/ZapfDingbats
3104   }
3105   \pdf_object_write:nne {__hyp/Font/Helv } { dict }
3106   {
3107     /Type/Font
3108     /Subtype/Type1
3109     /Name/Helv
3110     /BaseFont/Helvetica
3111     /Encoding~\pdf_object_ref:n { __hyp/Encoding/pdfdoc }
3112   }
3113   \global\let\Hy@FormObjects\relax
3114   }
3115   \ExplSyntaxOff
3116   \providecommand*{\Fld@pageobjref}{\}
3117   \ifcsname pdf@escapestring\endcsname
3118     \def\Hy@escapeform#1{%
3119       \ifHy@pdfescapeform
3120         \let\Hy@escapestring\pdfescapestring
3121       \else
3122         \let\Hy@escapestring\@firstofone
3123       \fi
3124     }%
3125     \Hy@escapeform}%
3126   \else
3127     \let\Hy@escapestring\@firstofone

```

```

3128 \def\Hy@escapeform#1{%
3129   \ifHy@pdfescapeform
3130     \def\Hy@escapestring##1{%
3131       \noexpand\Hy@escapestring{\noexpand##1}%
3132     }%
3133     \edef\Hy@temp{#1}%
3134     \expandafter\Hy@@escapeform\Hy@temp\Hy@escapestring{ }\@nil
3135   \def\Hy@escapestring##1{%
3136     \ifundefined{Hy@esc@\string##1}{%
3137       ##1%
3138       \ThisShouldNotHappen
3139     }{%
3140       \csname Hy@esc@\string##1\endcsname
3141     }%
3142   }%
3143   \else
3144     \let\Hy@escapestring\@firstofone
3145   \fi
3146 }%
3147 \def\Hy@@escapeform#1\Hy@escapestring#2#3\@nil{%
3148   \ifx\#3\%
3149   \else
3150     \expandafter
3151     \Hy@pstringdef\csname Hy@esc@\string#2\endcsname{#2}% probably string-hex
3152     \Hy@ReturnAfterFi{%
3153       \Hy@@escapeform#3\@nil
3154     }%
3155   \fi
3156 }%
3157 \fi
3158 \def\PDFForm@Name{%
3159   \PDFForm@@Name\Fld@name
3160   \ifx\Fld@altname\relax
3161   \else
3162     \PDFForm@@Name\Fld@altname
3163   \fi
3164   \ifx\Fld@mappingname\relax
3165   \else
3166     \PDFForm@@Name\Fld@mappingname
3167   \fi
3168 }
3169 \def\PDFForm@@Name#1{%
3170   \begingroup
3171     \ifnum\Hy@pdfversion<5 % implementation note 117, PDF spec 1.7
3172     \ifHy@unicode
3173       \Hy@unicodedefalse
3174     \fi
3175     \fi
3176     \pdfstringdef\Hy@gtemp#1%
3177   \endgroup
3178   \let#1\Hy@gtemp
3179 }
3180 \def\Fld@X@additionalactions{%
3181   \ifx\Fld@keystroke@code\@empty

```

```

3182 \else
3183 /K<</S/JavaScript/JS(\Hy@escapestring{\Fld@keystroke@code})>>%
3184 \fi
3185 \ifx\Fld@format@code\@empty
3186 \else
3187 /F<</S/JavaScript/JS(\Hy@escapestring{\Fld@format@code})>>%
3188 \fi
3189 \ifx\Fld@validate@code\@empty
3190 \else
3191 /V<</S/JavaScript/JS(\Hy@escapestring{\Fld@validate@code})>>%
3192 \fi
3193 \ifx\Fld@calculate@code\@empty
3194 \else
3195 /C<</S/JavaScript/JS(\Hy@escapestring{\Fld@calculate@code})>>%
3196 \fi
3197 \ifx\Fld@onfocus@code\@empty
3198 \else
3199 /Fo<</S/JavaScript/JS(\Hy@escapestring{\Fld@onfocus@code})>>%
3200 \fi
3201 \ifx\Fld@onblur@code\@empty
3202 \else
3203 /Bl<</S/JavaScript/JS(\Hy@escapestring{\Fld@onblur@code})>>%
3204 \fi
3205 \ifx\Fld@onmousedown@code\@empty
3206 \else
3207 /D<</S/JavaScript/JS(\Hy@escapestring{\Fld@onmousedown@code})>>%
3208 \fi
3209 \ifx\Fld@onmouseup@code\@empty
3210 \else
3211 /U<</S/JavaScript/JS(\Hy@escapestring{\Fld@onmouseup@code})>>%
3212 \fi
3213 \ifx\Fld@onenter@code\@empty
3214 \else
3215 /E<</S/JavaScript/JS(\Hy@escapestring{\Fld@onenter@code})>>%
3216 \fi
3217 \ifx\Fld@onexit@code\@empty
3218 \else
3219 /X<</S/JavaScript/JS(\Hy@escapestring{\Fld@onexit@code})>>%
3220 \fi
3221 }
3222 \ExplSyntaxOn
3223 \def\Fld@additionalactions
3224 {%
3225 \exp_args:Ne\str_if_eq:nnF {\Fld@X@additionalactions}{}
3226 {
3227 \pdfmeta_standard_verify:nT {annot_widget_no_AA}
3228 {/AA<<\Fld@X@additionalactions>>}
3229 }
3230 }
3231 \def\Fld@annotnames{%
3232 /T(\Fld@name)%
3233 \ifx\Fld@altname\relax
3234 \else
3235 /TU(\Fld@altname)%

```

```

3236 \fi
3237 \ifx\Fld@mappingname\relax
3238 \else
3239 /TM(\Fld@mappingname)%
3240 \fi
3241 }
3242
3243 \def\PDFForm@Check
3244 {
3245 /Subtype/Widget
3246 ~\Fld@annotflags
3247 ~\Fld@pageobjref
3248 ~\Fld@annotnames
3249 /FT/Btn
3250 \Fld@flags
3251 /Q~\Fld@align
3252 /BS<</W~\Fld@borderwidth /S/\Fld@borderstyle>>
3253 /AP
3254 <<
3255 /N
3256 <<
3257 /Yes~\pdfxform_ref:n{__hyp_xform_CheckMarkYes}
3258 /Off~\pdfxform_ref:n{__hyp_xform_CheckMarkOff}
3259 >>
3260 >>
3261 /MK<<
3262 \int_compare:nNnF {\Fld@rotation}={0}
3263 {
3264 /R~\Fld@rotation
3265 }
3266 \tl_if_empty:NF\Fld@bordercolor
3267 {
3268 /BC[\Fld@bordercolor]
3269 }
3270 \tl_if_empty:NF\Fld@bcolor
3271 {
3272 /BG[\Fld@bcolor]
3273 }
3274 /CA(\Hy@escapestring{\Fld@cbsymbol})%
3275 >>
3276 /DA
3277 (
3278 /ZaDb~\strip@pt\Fld@charsize\c_space_tl Tf
3279 \tl_if_empty:NF \Fld@color
3280 {
3281 \c_space_tl \Fld@color
3282 }
3283 )
3284 /H/P
3285 \legacy_if:nTF {Fld@checked}
3286 {
3287 /V/Yes /AS/Yes
3288 }
3289 {

```

```

3290     /V/Off /AS/Off
3291   }
3292   \Fld@additionalactions
3293 }
3294
3295 \def\PDFForm@Push
3296 {
3297   /Subtype/Widget
3298   ~\Fld@annotflags
3299   ~\Fld@pageobjref
3300   ~\Fld@annotnames
3301   /FT/Btn
3302   ~\Fld@flags
3303   /H/P
3304   /BS<</W~\Fld@borderwidth/S/\Fld@borderstyle>>
3305   \bool_if:nT
3306   {
3307     !\int_compare_p:nNn {\Fld@rotation} = {0}
3308     ||
3309     \tl_if_exist_p:N \Fld@bordercolor
3310   }
3311   {
3312     /MK
3313     <<
3314     \int_compare:nNnF {\Fld@rotation} = {0}
3315     {
3316       /R~\Fld@rotation
3317     }
3318     \tl_if_exist:NT \Fld@bordercolor
3319     {
3320       /BC[\Fld@bordercolor]
3321     }
3322     >>
3323   }
3324   /A<</S/JavaScript/JS(\Hy@escapestring{\Fld@onclick@code})>>
3325   \Fld@additionalactions
3326 }
3327
3328 \ExplSyntaxOff
3329 \def\PDFForm@List{%
3330 /Subtype/Widget%
3331 \Fld@annotflags
3332 \Fld@pageobjref
3333 \Fld@annotnames
3334 /FT/Ch%
3335 \Fld@flags
3336 /Q \Fld@align
3337 /BS<</W \Fld@borderwidth/S/\Fld@borderstyle>>%
3338 \ifcase0\ifnum\Fld@rotation=\z@ \else 1\fi
3339 \ifx\Fld@bordercolor\relax\else 1\fi
3340 \ifx\Fld@bcolor\relax \else 1\fi
3341 \space
3342 \else
3343 /MK<<%

```

```

3344     \ifnum\Fld@rotation=\z@
3345     \else
3346         /R \Fld@rotation
3347     \fi
3348     \ifx\Fld@bordercolor\relax
3349     \else
3350         /BC[\Fld@bordercolor]%
3351     \fi
3352     \ifx\Fld@bcolor\relax
3353     \else
3354         /BG[\Fld@bcolor]%
3355     \fi
3356     >>%
3357 \fi
3358 /DA(/Helv \strip@pt\Fld@charsize\space Tf%
3359     \ifx\Fld@color\@empty\else\space\Fld@color\fi)%
3360 \Fld@choices
3361 \Fld@additionalactions
3362 }
3363 \ExplSyntaxOn
3364 \def\PDFForm@Radio
3365 {
3366     /Subtype/Widget
3367     ~\Fld@annotflags
3368     ~\Fld@pageobjref
3369     ~\Fld@annotnames
3370     /FT/Btn
3371     \Fld@flags
3372     /H/P
3373     /BS<</W~\Fld@borderwidth/S/\Fld@borderstyle>>
3374     /MK<<
3375     \ifnum\Fld@rotation=\z@
3376     \else
3377         /R~\Fld@rotation
3378     \fi
3379     \ifx\Fld@bordercolor\relax
3380     \else
3381         /BC[\Fld@bordercolor]%
3382     \fi
3383     \ifx\Fld@bcolor\relax
3384     \else
3385         /BG[\Fld@bcolor]%
3386     \fi
3387     /CA(\Hy@escapestring{\Fld@radiosymbol})%
3388     >>
3389     /DA(/ZaDb~\strip@pt\Fld@charsize\space Tf%
3390         \ifx\Fld@color\@empty\else\space\Fld@color\fi)%
3391     \ifx\Fld@default\@empty
3392         /V/Off%
3393         /DV/Off%
3394     \else
3395         /V/\Fld@default
3396         /DV/\Fld@default
3397     \fi

```



```

3398   \Fld@additionalactions
3399   }
3400
3401   % Does an appearance dict make sense here?
3402   \def\PDFForm@Text
3403   {
3404     /Subtype/Widget
3405     ~\Fld@annotflags
3406     ~\Fld@pageobjref
3407     ~\Fld@annotnames
3408     /FT/Tx
3409     ~\Fld@flags
3410     /Q~\Fld@align
3411     /BS<</W~\Fld@borderwidth\c_space_tl /S /\Fld@borderstyle>>
3412     \bool_if:nT
3413     {
3414       !\int_compare_p:nNn {\Fld@rotation} = {0}
3415       ||
3416       \tl_if_exist_p:N \Fld@bordercolor
3417       ||
3418       \tl_if_exist_p:N \Fld@bcolor
3419     }
3420     {
3421       /MK
3422       <<
3423         \int_compare:nNnF {\Fld@rotation} = {0}
3424         {
3425           /R~\Fld@rotation
3426         }
3427         \tl_if_exist:NT \Fld@bordercolor
3428         {
3429           /BC[\Fld@bordercolor]
3430         }
3431         \tl_if_exist:NT \Fld@bcolor
3432         {
3433           /BG[\Fld@bcolor]
3434         }
3435       >>
3436     }
3437     /DA
3438     (
3439       /Helv~\strip@pt\Fld@charsize\c_space_tl Tf
3440       \tl_if_empty:NF {\c_space_tl\Fld@color}
3441     )
3442     /DV(\Hy@escapestring{\Fld@default})
3443     /V(\Hy@escapestring{\Fld@value})
3444     ~\Fld@additionalactions
3445     \int_compare:nNnT { \Fld@maxlen}>{0}
3446     {
3447       /MaxLen~\Fld@maxlen
3448     }
3449   }
3450   \ExplSyntaxOff
3451

```

```

3452 \def\PDFForm@Submit{%
3453   /Subtype/Widget%
3454   \Fld@annotflags
3455   \Fld@pageobjref
3456   \Fld@annotnames
3457   /FT/Btn%
3458   \Fld@flags
3459   /H/P%
3460   /BS<</W \Fld@borderwidth/S/\Fld@borderstyle>>%
3461   \ifcase0\ifnum\Fld@rotation=\z@ \else 1\fi
3462     \ifx\Fld@bordercolor\relax\else 1\fi
3463     \space
3464   \else
3465     /MK<<%
3466       \ifnum\Fld@rotation=\z@
3467       \else
3468         /R \Fld@rotation
3469       \fi
3470       \ifx\Fld@bordercolor\relax
3471       \else
3472         /BC[\Fld@bordercolor]%
3473       \fi
3474     >>%
3475   \fi
3476   /A<<%
3477     /S/SubmitForm%
3478     /F<<%
3479     /FS/URL%
3480     /F(\Hy@escapestring{\Form@action})%
3481     >>%
3482     \Fld@submitflags
3483   >>%
3484   \Fld@additionalactions
3485 }
3486 \ExplSyntaxOn
3487   \def\PDFForm@Reset{%
3488     /Subtype/Widget%
3489     \Fld@annotflags
3490     \Fld@pageobjref
3491     \Fld@annotnames
3492     /FT/Btn%
3493     \Fld@flags
3494     /H/P%
3495     /DA(/Helv~\strip@pt\Fld@charsize\space Tf~0~0~1~rg)%
3496     \ifcase0\ifnum\Fld@rotation=\z@ \else 1\fi
3497       \ifx\Fld@bordercolor\relax\else 1\fi
3498       \space
3499     \else
3500       /MK<<%
3501         \ifnum\Fld@rotation=\z@
3502         \else
3503           /R~\Fld@rotation
3504         \fi
3505         \ifx\Fld@bordercolor\relax

```

```

3506         \else
3507             /BC[\Fld@bordercolor]%
3508         \fi
3509     >>%
3510     \fi
3511     /BS<</W \Fld@borderwidth/S/\Fld@borderstyle>>%
3512     /A<</S/ResetForm>>%
3513     \Fld@additionalactions
3514 }%
3515
3516
3517 %these patterns are used in hyperref checks.
3518 %it is unclear if they are really useful and if a backend support is
3519 %needed.
3520 \str_case:VnF \c_sys_backend_str
3521 {
3522     { pdfmode }
3523     {
3524         \def\HyPat@ObjRef
3525         {
3526             [0-9]*[1-9][0-9]*~0~R
3527         }
3528     }
3529     { dvipdfmx }
3530     {
3531         \def\HyPat@ObjRef
3532         {
3533             @[\~]+
3534         }
3535     }
3536     { xdvipdfmx }
3537     {
3538         \def\HyPat@ObjRef
3539         {
3540             @[\~]+
3541         }
3542     }
3543 }
3544 { %also set in hyperref sty, so probably not needed.
3545     \def\HyPat@ObjRef/{.+}
3546 }
3547
3548
3549 \ExplSyntaxOff
3550 % UF: removed Hy@writebookmark
3551 %     \Hy@currentbookmarklevel{0}
3552 %     \Hy@numberline
3553 %     \@@writetorep
3554 %     counter{bookmark@seq@number}
3555 % removed \HyPsd@SanitizeForOutFile, not needed
3556 % removed \currentpdfbookmark, defined by bookmark,
3557 % should use \newcommand there
3558 % removed \subpdfbookmark, defined by bookmark,
3559 % should use \newcommand there

```

```

3560 % removed \belowpdfbookmark, defined by bookmark,
3561 % should use \newcommand there
3562 % removed \pdfbookmark, defined by bookmark,
3563 % \BOOKMARK
3564 % \@BOOKMARK
3565 %% \RequirePackage{rerunfilecheck}[2009/12/10]
3566 %% removed \Hy@OutlineRerunCheck, unneeded with bookmark
3567 %% removed \ReadBookmarks / unneeded with bookmark.
3568 %% removed \Hy@OutlineName
3569 %% removed \check@bm@number
3570 %% removed \calc@bm@number
3571
3572 \ifHy@implicit
3573 \else
3574   \expandafter\endinput
3575 \fi
3576 \newlength\Hy@SectionHShift
3577 \def\Hy@SectionAnchorHref#1{%
3578   \ifx\protect\@typeset@protect
3579     \Hy@@SectionAnchor{#1}%
3580   \fi
3581 }
3582 \DeclareRobustCommand*\Hy@@SectionAnchor}[1]{%
3583   \leavevmode
3584   \hbox to 0pt{%
3585     \kern-\Hy@SectionHShift
3586     \Hy@raisedlink{%
3587       \hyper@anchorstart{#1}\hyper@anchorend
3588     }%
3589     \hss
3590   }%
3591 }
3592 \@ifundefined{hyper@nopatch@sectioning}
3593 {
3594   \let\H@old@ssect\@ssect
3595   \def\@ssect#1#2#3#4#5{%
3596     \Hy@MakeCurrentHrefAuto{section*}%
3597     \setlength{\Hy@SectionHShift}{#1}%
3598     \begingroup
3599       \toks@{\H@old@ssect{#1}{#2}{#3}{#4}}%
3600       \toks\tw@\expandafter{%
3601         \expandafter\Hy@SectionAnchorHref\expandafter{\@currentHref}%
3602         #5%
3603       }%
3604       \edef\x{\endgroup
3605         \the\toks@\the\toks\tw@}%
3606     }\x
3607 }
3608 \let\H@old@schapter\@schapter
3609 \def\@schapter#1{%
3610   \begingroup
3611     \let\@mkboth\@gobbletwo
3612     \Hy@MakeCurrentHrefAuto{\Hy@chapapp*}%
3613     \Hy@raisedlink{%

```

```

3614     \hyper@anchorstart{\@currentHref}\hyper@anchorend
3615     }%
3616 \endgroup
3617 \H@old@schapter{#1}%
3618 }
3619 \@ifundefined{@chapter}{}{%
3620 \let\Hy@org@chapter\@chapter
3621 \def\@chapter{%
3622   \def\Hy@next{%
3623     \Hy@MakeCurrentHrefAuto{\Hy@chapapp*}%
3624     \Hy@raisedlink{%
3625       \hyper@anchorstart{\@currentHref}\hyper@anchorend
3626     }%
3627   }%
3628   \ifnum\c@secnumdepth>\m@ne
3629     \@ifundefined{if@mainmatter}%
3630     \iftrue{\csname if@mainmatter\endcsname}%
3631     \let\Hy@next\relax
3632   \fi
3633   \fi
3634   \Hy@next
3635   \Hy@org@chapter
3636 }%
3637 }
3638 \let\H@old@part\@part
3639 \begingroup\expandafter\expandafter\expandafter\endgroup
3640 \expandafter\ifx\csname chapter\endcsname\relax
3641 \let\Hy@secnum@part\z@
3642 \else
3643 \let\Hy@secnum@part\m@ne
3644 \fi
3645 \def\@part{%
3646 \ifnum\Hy@secnum@part>\c@secnumdepth
3647 \phantomsection
3648 \fi
3649 \H@old@part
3650 }
3651 \let\H@old@spart\@spart
3652 \def\@spart#1{%
3653 \Hy@MakeCurrentHrefAuto{part*}%
3654 \Hy@raisedlink{%
3655 \hyper@anchorstart{\@currentHref}\hyper@anchorend
3656 }%
3657 \H@old@spart{#1}%
3658 }
3659 \let\H@old@sect\@sect
3660 \def\@sect#1#2#3#4#5#6[#7]#8{%
3661 \ifnum #2>\c@secnumdepth
3662 \expandafter\@firstoftwo
3663 \else
3664 \expandafter\@secondoftwo
3665 \fi
3666 {%
3667 \Hy@MakeCurrentHrefAuto{section*}%

```

```

3668 \setlength{\Hy@SectionHShift}{#3}%
3669 \begingroup
3670 \toks@{\H@old@sect{#1}{#2}{#3}{#4}{#5}{#6}[[#7]]}%
3671 \toks\tw@\expandafter{%
3672 \expandafter\Hy@SectionAnchorHref\expandafter{\@currentHref}%
3673 #8%
3674 }%
3675 \edef\x{\endgroup
3676 \the\toks@\the\toks\tw@}%
3677 }\x
3678 }{%
3679 \H@old@sect{#1}{#2}{#3}{#4}{#5}{#6}[[#7]][#8]%
3680 }%
3681 }
3682 }{}
3683 \expandafter\def\csname Parent-4\endcsname{}
3684 \expandafter\def\csname Parent-3\endcsname{}
3685 \expandafter\def\csname Parent-2\endcsname{}
3686 \expandafter\def\csname Parent-1\endcsname{}
3687 \expandafter\def\csname Parent0\endcsname{}
3688 \expandafter\def\csname Parent1\endcsname{}
3689 \expandafter\def\csname Parent2\endcsname{}
3690 \expandafter\def\csname Parent3\endcsname{}
3691 \expandafter\def\csname Parent4\endcsname{}
3692 %%
3693 \endpackage
3694 \@@=hyp
3695 \*colorscheme
3696 % collected from https://tex.stackexchange.com/questions/525261/better-default-
3697 % colors-for-hyperref-links
3698 % cite color ignored, as it doesn't fit ... should be done by cite packages ?
3699 % linkcolor=
3700 %,filecolor=
3701 %,urlcolor=
3702 %,menucolor=
3703 %,runcolor=
3704 %,linkbordercolor=
3705 %,filebordercolor=
3706 %,urlbordercolor=
3707 %,menubordercolor=
3708 %,runbordercolor=
3709 \prop_const_from_keyval:cn { c_hyp_colorscheme_primary-colors_prop }
3710 {
3711 linkcolor = [rgb]{1,0,0}, %red
3712 filecolor = [rgb]{0,1,1}, %cyan
3713 urlcolor = [rgb]{1,0,1}, %magenta
3714 menucolor = [rgb]{1, 0, 0}, %red
3715 runcolor = [rgb]{0,1,1}, %cyan
3716 %-----
3717 linkbordercolor = [rgb]{1, 0 ,0 },
3718 filebordercolor = [rgb]{0, .5, .5},
3719 urlbordercolor = [rgb]{0, 1, 1},
3720 menubordercolor = [rgb]{1, 0, 0},

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```

3721   runbordercolor = [rgb]{0, .7, .7}
3722 }
3723
3724 \prop_const_from_keyval:Nn \c__hyp_colorscheme_daleif_prop
3725 {
3726   linkcolor      = [rgb]{0,0.2,0.6},
3727   filecolor      = [rgb]{0.8,0,0.8},
3728   urlcolor       = [rgb]{0.8,0,0.8},
3729   menucolor      = [rgb]{0,0.2,0.6},
3730   runcolor       = [rgb]{0.8,0,0.8},
3731   %-----      %-----
3732   linkbordercolor = [rgb]{0,0.2,0.6},
3733   filebordercolor = [rgb]{0.8,0,0.8},
3734   urlbordercolor = [rgb]{0.8,0,0.8},
3735   menubordercolor = [rgb]{0,0.2,0.6},
3736   runbordercolor = [rgb]{0.8,0,0.8}
3737 }
3738
3739 \prop_const_from_keyval:Nn \c__hyp_colorscheme_julian_prop
3740 { %two colors: intern/extern
3741   linkcolor      = [rgb]{0.79216, 0, 0.12549},
3742   filecolor      = [rgb]{0.01961, 0.44314, 0.6902},
3743   urlcolor       = [rgb]{0.01961, 0.44314, 0.6902},
3744   menucolor      = [rgb]{0.79216, 0, 0.12549 },
3745   runcolor       = [rgb]{0.01961, 0.44314, 0.6902 },
3746   %-----      %-----
3747   linkbordercolor = [rgb]{0.79216, 0, 0.12549},
3748   filebordercolor = [rgb]{0.01961, 0.44314, 0.6902},
3749   urlbordercolor = [rgb]{0.01961, 0.44314, 0.6902},
3750   menubordercolor = [rgb]{0.79216, 0, 0.12549 },
3751   runbordercolor = [rgb]{0.01961, 0.44314, 0.6902 }
3752 }
3753
3754 \prop_const_from_keyval:Nn \c__hyp_colorscheme_tivv_prop
3755 { %all darkgray
3756   linkcolor      = [rgb]{0.4 ,0.4 ,0.4 },
3757   filecolor      = [rgb]{0.4 ,0.4 ,0.4 },
3758   urlcolor       = [rgb]{0.4 ,0.4 ,0.4 },
3759   menucolor      = [rgb]{0.4 ,0.4 ,0.4 },
3760   runcolor       = [rgb]{0.4 ,0.4 ,0.4 },
3761   %-----      %-----
3762   linkbordercolor = [rgb]{0.4 ,0.4 ,0.4 },
3763   filebordercolor = [rgb]{0.4 ,0.4 ,0.4 },
3764   urlbordercolor = [rgb]{0.4 ,0.4 ,0.4 },
3765   menubordercolor = [rgb]{0.4 ,0.4 ,0.4 },
3766   runbordercolor = [rgb]{0.4 ,0.4 ,0.4 }
3767 }
3768
3769 \prop_const_from_keyval:Nn \c__hyp_colorscheme_szabolcsA_prop
3770 { %dvipsnam.def
3771   linkcolor      = [rgb]{0.06, 0.46, 1}, %NavyBlue
3772   filecolor      = [rgb]{1, 0, 0}, %Red
3773   urlcolor       = [rgb]{0.06, 0.46, 1}, %NavyBlue
3774   menucolor      = [rgb]{1, 0, 0}, %Red

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3775   runcolor          = [rgb]{1, 0, 0}, %Red
3776 %-----          %-----
3777   linkbordercolor = [rgb]{0.06, 0.46, 1}, %NavyBlue
3778   filebordercolor = [rgb]{1, 0, 0}, %Red
3779   urlbordercolor  = [rgb]{0.06, 0.46, 1}, %NavyBlue
3780   menubordercolor = [rgb]{1, 0, 0}, %Red
3781   runbordercolor  = [rgb]{1, 0, 0} %Red
3782 }
3783
3784 \prop_const_from_keyval:Nn \c__hyp_colorscheme_szabolcsB_prop
3785 { %dvipsnam.def
3786   linkcolor        = [rgb]{0.72, 0, 0}, %BrickRed
3787   filecolor        = [rgb]{0, 1, 0}, %Green
3788   urlcolor         = [rgb]{0.64, 0.08, 0.98}, %Mulberry
3789   menucolor        = [rgb]{0.06, 0.46, 1}, %NavyBlue
3790   runcolor         = [rgb]{0.64, 0.08, 0.98}, %Mulberry
3791 %-----          %-----
3792   linkbordercolor = [rgb]{0.72, 0, 0}, %BrickRed
3793   filebordercolor = [rgb]{0, 1, 0}, %Green
3794   urlbordercolor  = [rgb]{0.64, 0.08, 0.98}, %Mulberry
3795   menubordercolor = [rgb]{0.06, 0.46, 1}, %NavyBlue
3796   runbordercolor  = [rgb]{0.64, 0.08, 0.98} %Mulberry
3797 }
3798
3799
3800 \prop_const_from_keyval:Nn \c__hyp_colorscheme_phelype_prop
3801 {
3802   linkcolor        = [rgb]{0.50196, 0, 0.02353},
3803   filecolor        = [rgb]{0.07451, 0.09412, 0.46667},
3804   urlcolor         = [rgb]{0.54118, 0, 0.52941},
3805   menucolor        = [rgb]{0.44706, 0.45882, 0},
3806   runcolor         = [rgb]{0.07451, 0.46667, 0.46275},
3807 %-----          %-----
3808   linkbordercolor = [rgb]{0.701176, 0.4, 0.414118},
3809   filebordercolor = [rgb]{0.444706, 0.456472, 0.680002},
3810   urlbordercolor  = [rgb]{0.724708, 0.4, 0.717646},
3811   menubordercolor = [rgb]{0.668236, 0.675292, 0.4},
3812   runbordercolor  = [rgb]{0.444706, 0.680002, 0.67765}
3813 }
3814
3815 \prop_const_from_keyval:Nn \c__hyp_colorscheme_henryford_prop
3816 {
3817   linkcolor        = [rgb]{0,0,0},
3818   filecolor        = [rgb]{0,0,0},
3819   urlcolor         = [rgb]{0,0,0},
3820   menucolor        = [rgb]{0,0,0},
3821   runcolor         = [rgb]{0,0,0},
3822 %-----          %-----
3823   linkbordercolor = [rgb]{0,0,0},
3824   filebordercolor = [rgb]{0,0,0},
3825   urlbordercolor  = [rgb]{0,0,0},
3826   menubordercolor = [rgb]{0,0,0},
3827   runbordercolor  = [rgb]{0,0,0}
3828 }

```


3829 </colorscheme>

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