

# Accessible Presentations with $\LaTeX$

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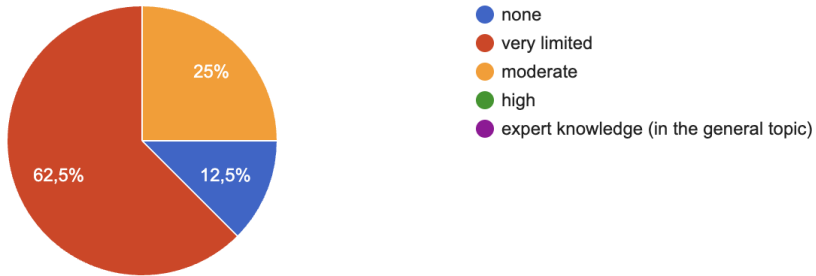
$\LaTeX$  Project Team

25.8.2026

DocEng 2026

# Introduction — Accessibility

Please rank your experience with producing accessible documents

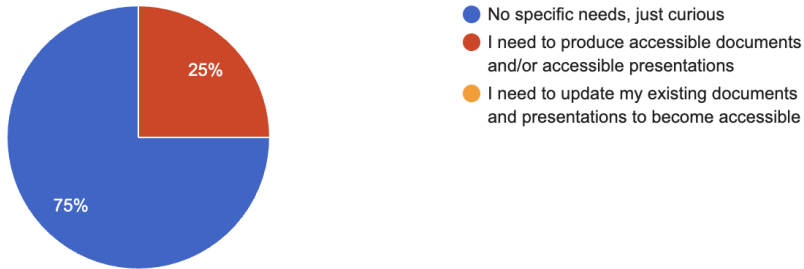


Accessibility is

- Transformability to different formats
- Reusability in different contexts

# Introduction — Accessibility, why should I care?

Please describe your needs



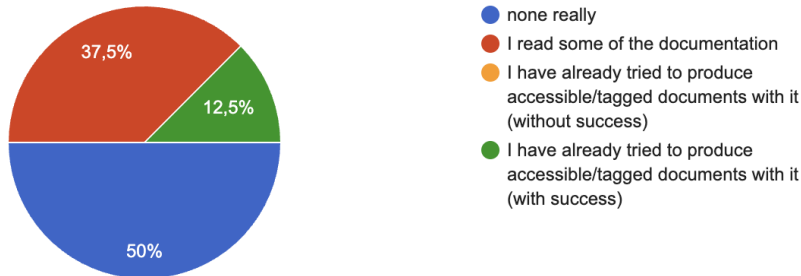
Accessibility is

- **not a nice to have** and only necessary for “important” documents
- essential for people with special needs
- equally important for everybody, as it fosters reuse

Accessibility **should be the default**, not an afterthought!

# Introduction — $\text{\LaTeX}$ Tagged PDF project

Please rank your knowledge of the “ $\text{\LaTeX}$  Tagged PDF project” that makes  $\text{\LaTeX}$  accessible



The project aims to make

- $\text{\LaTeX}$  documents reusable by providing the semantic information in the PDF
- PDF/UA-2 compliant documents

Important: this is supposed to happen **automatically** without manual post-processing/remediation

# Introduction — Why use $\text{\LaTeX}$ in the first place?

General qualities:

- Highest typographic quality
- Particularly suited for STEM documents containing (complex) math
- Reusability
- Customizability
- **And now:** makes accessible documents automatically

With respect to presentations:

- Seamless reuse of article data in presentations and vice versa

# Accessibility

- Access with Screen readers
- Access with Braille readers
- Access for those with color blindness: contrast
- Access for those with low vision: large fonts
- Access by mobile phone: reflow
- Access by copy&paste: Unicode, space chars
- Access by machines for data extractions or conversion
- ...

# Accessibility

- access the text content: correct characters, correct reading order
- access non-text data: alt text for graphics, subtitle for audio, ...
- allow navigation: jump to next section, next list item, next table row...
- access structure: identify headings, lists, table headers, rows and cells, ...
- access math
- ...

# Goals of the Tagged PDF Project

- improve accessibility of PDF documents produced by  $\text{\LaTeX}$
- tagging should be *automatic* and *easy*
- push PDF 2.0 — better for accessibility
  - ⇒ Paper DocEng25, Best Practice Guide: Math in PDF  
<https://pdfa.org/resource/best-practice-guide-math-in-pdf/>
- trigger improvements in viewers and tools
  - ⇒ <https://pdfa.org/accessible-math-in-pdf-finally/>



# Formats and standards

- PDF standards: (PDF 2.0, PDF/UA-2, WTPDF):  
<https://pdfa.org/sponsored-standards>
- Best Practice Guide: Math in PDF  
<https://pdfa.org/resource/best-practice-guide-math-in-pdf/>

## Checker and validator

**ngpdf** <https://ngpdf.com>, <https://texlive.net/ngpdf>

**verapdf** <https://verapdf.org>

**PAC** <https://pac.pdf-accessibility.org/de> (only PDF 1.7)

**PDF editors** adobe, foxit, pdf-xchange, pdfix .....

**show-pdf-tags** in TeXlive, <https://texlive.net/showtags>

**octopdf** <https://octopdf.com>

**Screen reader** NVDA <https://www.nvaccess.org> (Windows)

## Tagged PDF – Recommended setup

- current TeX system (  $\Rightarrow$  log-file)
- lualatex or lualatex-dev + unicode-math or lua-unicode-math

# Main entry pages of the Tagged PDF Project

<https://latex3.github.io/tagging-project/>

<https://github.com/latex3/tagging-project>

- documentation for prototype documents
- examples
- issue tracker
- compatibility status of packages and classes

# Tagged PDF: Prototype

```
\DocumentMetadata
{
  lang=en-US,
  pdfstandard=ua-2,
  tagging=on,
  tagging-setup={math/setup=mathml-SE} %or mathml-AF
}
\documentclass{article}
\usepackage{unicode-math} % or lua-unicode-math
```

⇒ tutorial-example-prototype.tex  
<https://latex3.github.io/tagging-project/documentation/tutorial/>

# DocumentMetadata changes many things

```
Auswählen LuaTeX ...
This is LuaHBTeX, Version 1.24.0 (TeX Live 2026)
restricted system commands enabled.
(./test-utf8.tex
LaTeX2e <2026-11-01> pre-release-0 (develop 2026-6-20 branch)
L3 programming layer <2026-06-19>
(c:/texlive/2026/texmf-dist/tex/latex-dev/latex-lab/documentmetadata-support.ltx (c:/texlive/2026/texmf-dist/tex/latex-
pdfmanagement/pdfmanagement-init.sty (c:/texlive/2026/texmf-dist/tex/latex/tagpdf/tagpdf-base.sty) (c:/texlive/2026/texmf-
dist/tex/latex/pdfmanagement/pdfmanagement.ltx))) (c:/texlive/2026/texmf-dist/tex/latex-dev/l3backend/l3backend-luatex
.def) (c:/texlive/2026/texmf-dist/tex/latex/pdfmanagement/l3backend-testphase-luatex.def) (c:/texlive/2026/texmf-dist/te
x/latex-dev/latex-lab/latex-lab-testphase-latest.sty (c:/texlive/2026/texmf-dist/tex/latex/tagpdf/tagpdf.sty (c:/texlive
/2026/texmf-dist/tex/latex/tagpdf/tagpdf-luatex.def) (c:/texlive/2026/texmf-dist/tex/latex/tagpdf/tagpdf-mc-code-lua.sty
)) (c:/texlive/2026/texmf-dist/tex/latex-dev/latex-lab/latex-lab-testphase-names.sty) (c:/texlive/2026/texmf-dist/tex/la
tex-dev/latex-lab/latex-lab-testphase-new-or-2.sty (c:/texlive/2026/texmf-dist/tex/latex-dev/latex-lab/latex-lab-footnot
es.ltx))
(c:/texlive/2026/texmf-dist/tex/latex-dev/latex-lab/latex-lab-testphase-block.sty (c:/texlive/2026/texmf-dist/tex/latex-
dev/latex-lab/latex-lab-enumitem.sty)) (c:/texlive/2026/texmf-dist/tex/latex-dev/latex-lab/latex-lab-testphase-context.s
ty) (c:/texlive/2026/texmf-dist/tex/latex-dev/latex-lab/latex-lab-kernel-changes.sty) (c:/texlive/2026/texmf-dist/tex/la
tex-dev/latex-lab/latex-lab-testphase-sec.sty) (c:/texlive/2026/texmf-dist/tex/latex-dev/latex-lab/latex-lab-testphase-s
ec-template.sty) (c:/texlive/2026/texmf-dist/tex/latex-dev/latex-lab/latex-lab-testphase-toc.sty) (c:/texlive/2026/texmf
-dist/tex/latex-dev/latex-lab/latex-lab-testphase-minipage.sty) (c:/texlive/2026/texmf-dist/tex/latex-dev/latex-lab/late
x-lab-testphase-graphic.sty) (./latex-lab-testphase-float.sty) (c:/texlive/2026/texmf-dist/tex/latex-dev/latex-lab/late
x-lab-testphase-bib.sty) (c:/texlive/2026/texmf-dist/tex/latex-dev/latex-lab/latex-lab-testphase-text.sty)
(c:/texlive/2026/texmf-dist/tex/latex-dev/latex-lab/latex-lab-testphase-marginpar.sty) (c:/texlive/2026/texmf-dist/tex/l
atex-dev/latex-lab/latex-lab-testphase-title.sty) (c:/texlive/2026/texmf-dist/tex/latex-dev/latex-lab/latex-lab-testphas
e-table.sty (c:/texlive/2026/texmf-dist/tex/latex-dev/tools/array.sty)) (c:/texlive/2026/texmf-dist/tex/latex-dev/latex-
lab/latex-lab-testphase-math.sty (c:/texlive/2026/texmf-dist/tex/latex-dev/latex-lab/latex-lab-math.ltx) (c:/texlive/202
6/texmf-dist/tex/latex-dev/latex-lab/latex-lab-mathpkg.ltx) (c:/texlive/2026/texmf-dist/tex/latex-dev/latex-lab/latex-la
b-mathintend.ltx)) (c:/texlive/2026/texmf-dist/tex/latex-dev/latex-lab/latex-lab-testphase-firstaid.sty) (c:/texlive/202
6/texmf-dist/tex/latex-dev/latex-lab/latex-lab-testphase-tikz.sty) (c:/texlive/2026/texmf-dist/tex/latex/pdfmanagement/
pdfmanagement-firstaid.sty) (c:/texlive/2026/texmf-dist/tex/latex-dev/base/book.cls
```

## DocumentMetadata changes many things: New definitions

- math (grabbed)
- footnotes (sockets)
- blocks, lists, theorems (templates)
- headings (2026-06-01) (templates)
- ...

# DocumentMetadata changes many things: New interfaces

More optional arguments and configuration options

```
\section
[
  placement      =top, %at top of page
  number-format=\fbox{\theheading},
  prefix         =Part~,
  title-decls    =\scshape,
  toc            =TOC,
  bookmark       =BOOKMARK
]
{The Bear}
```

⇒ tutorial-example-section

<https://latex3.github.io/tagging-project/documentation/tutorial/>



# DocumentMetadata changes many things: Packages

- Packages are replaced and emulated (enumitem, alltt, ...)
- Packages add tagging support (tcolorbox, incgraph, pdfcomment, marginalia ...)
- Various package are still incompatible:

<https://github.com/latex3/tagging-project/issues>

<https://latex3.github.io/tagging-project/tagging-status/>

- alternative text
- actual text
- artifact

⇒ `tutorial-example-graphic.tex`

<https://latex3.github.io/tagging-project/documentation/tutorial/>

- headers must be marked
- multi rows must be marked
- The package multirow is not yet compatible, see <https://github.com/latex3/tagging-project/issues/894> for a work around.

⇒ `tutorial-example-table.tex`

<https://latex3.github.io/tagging-project/documentation/tutorial/>

- complex accessible math needs PDF 2.0
- we attach small MathML files as “associated files”
- or we create MathML structure elements

⇒ `tutorial-example-math.tex`

<https://latex3.github.io/tagging-project/documentation/tutorial/>

## Tagged PDF — incompatible packages

<https://github.com/latex3/tagging-project/issues>

<https://latex3.github.io/tagging-project/tagging-status/>

```
\DocumentMetadata{check-tagging-status}
```

⇒ tutorial-tagging-status.log  
<https://latex3.github.io/tagging-project/documentation/tutorial/>

- parent-child warnings from faulty nesting of structures:

```
Package tagpdf Warning: Parent-Child 'pdf2:Document' --> 'pdf2:Lbl'.
```

```
(tagpdf)                Relation is not allowed! on line 58
```

```
(tagpdf)                struct 2, Document --> struct 30, footnotelabel
```

⇒ example: tutorial-warnings-parent-child

- Errors from unbalanced paragraph structures:

```
! Package tagpdf Error: The number of automatic begin (2) and end (3)
(tagpdf)                text-unit para hooks differ!
```

⇒ tutorial-error-para.tex



- broken structures

Package tagpdf Warning: There are still open structures on the stack!

(tagpdf) The stack contains

(tagpdf) {list}{L},{text-unit}{Part},{Document}{Document},{Root}  
{StructTreeRoot}.

(tagpdf) The structures are automatically closed,

(tagpdf) but their nesting can be wrong.

⇒ tutorial-warning-open-structure

Questions?

# Why are presentations special?

- Dynamic content

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- Dynamic content
- Frames: forced page breaks

# Why are presentations special?

- Dynamic content
- Frames: forced page breaks
- Highly visual format

# Terminology

**frame** A “single page” for the viewer

**slide** One (real) page inside a frame: may vary in content

**overlay** Way of describing slides in a frame; how the content appears/disappears

**action** Changes to content beyond simply appearing and vanishing; most common is adding color

# A first presentation

```
\DocumentMetadata{tagging = on, pdfstandard = UA-2}  
\documentclass{ltx-talk}  
\title{A demo}  
\author{Danbert Nobacon}  
\begin{document}  
\maketitle  
\begin{frame}  
  \frametitle{Some things we did}  
  \begin{itemize}[<+>]  
    \item Get cape  
    \item Wear cape  
    \item \dots  
  \end{itemize}  
\end{frame}  
\end{document}
```

## Discussion points

- Should frames appear in the tagging structure?
- What is the role of frame titles: are they required?
- When does one frame split into two because of complex overlays?
- How does tagging work for content that appears and disappears?



Practical examples

```
\DocumentMetadata{tagging = on, pdfstandard = ua-2}  
\documentclass{ltx-talk}  
\title{Relative overlays}  
\begin{document}  
\begin{frame}  
  \begin{itemize}[<+>]  
    \item First  
    \item Second  
    \item Third  
    \item<.-> Fourth  
  \end{itemize}  
\end{frame}  
\end{document}
```

```
\DocumentMetadata{tagging = on, pdfstandard = ua-2}  
\title{List actions}  
\documentclass{ltx-talk}  
\begin{document}  
\begin{frame}  
  \begin{itemize}[<alert@+>]  
    \item First  
    \item Second  
    \item Third  
  \end{itemize}  
\end{frame}  
\end{document}
```

```
\DocumentMetadata{tagging = on, pdfstandard = ua-2}  
\documentclass{ltx-talk}  
\title{List actions}  
\begin{document}  
\begin{frame}  
  \begin{itemize}[<alert@+>]  
    \item First  
    \item Second  
    \item Third  
  \end{itemize}  
\end{frame}  
\end{document}
```

```
\DocumentMetadata{tagging = on, pdfstandard = ua-2}
\documentclass{ltx-talk}
\title{Footer colors}
\EditInstance{header}{std}{
  background-color = blue!50,
  color            = white,
}
\EditInstance{footer}{std}{
  background-color = blue!50
}
\begin{document}
\begin{frame}
  \frametitle{Frametitle}
  content
\end{frame}
\end{document}
```

```
\DocumentMetadata{tagging = on, pdfstandard = ua-2}
\documentclass{ltx-talk}
\title{Background images}
\begin{document}
\begin{frame}
  Some text
\end{frame}
\AddToHook{shipout/background}
{
  \put(0cm, -\paperheight)
  {
    \includegraphics[artifact,
      width = \paperwidth, height = \paperheight]
      {example-image-a}}
}
\begin{frame}
  Some text
\end{frame}
\end{document}
```

```
\DocumentMetadata{tagging = on, pdfstandard = ua-2}
\documentclass{ltx-talk}
\title{Background images}
\EditInstance{footer}{std}{
  color          = black!50,
  separator      = \hfill|\hfill,
  element-order  = {date, author, title, institute, framenumbers},
  right-hspace   = 3mm,
  left-hspace    = 3mm,
}
\author{Author Name}
\title[short-title = {Presentation title}]
  {A Long Presentation Title Which Would Not Fit in a Footer!}
\institute{Interesting Conference}
\begin{document}
\begin{frame}
  \maketitle[framestyle = wallpaper]
\end{frame}
\begin{frame}
```

```
\DocumentMetadata{tagging = on, pdfstandard = ua-2}  
\documentclass{ltx-talk}  
\EditInstance{floatenv}{std}{horizontal-alignment = center}  
\begin{document}  
  \begin{frame}  
    Some content  
    \begin{figure}  
      `Float' content.  
    \end{figure}  
    More content.  
  \end{frame}  
\end{document}
```



```
\DocumentMetadata{tagging = on, pdfstandard = ua-2}  
\documentclass{ltx-talk}  
\title{Setting opacity}  
\EditInstance{hidden}{std}{opacity = 0.15}  
\begin{document}  
\begin{frame}  
  \begin{itemize}[<+>]  
    \item First  
    \item Second  
    \item Third  
  \end{itemize}  
\end{frame}  
\end{document}
```

```
\DocumentMetadata{tagging = on, pdfstandard = ua-2}
\documentclass{ltx-talk}
\title{Verbatim}
\usepackage{fancyvrb}
\begin{document}
\begin{frame*}
  Text
  \begin{actionenv}<+ -|alert@+>
    \begin{Verbatim}[gobble = 6]
      Some content
      %#$_\
      XXX
    \end{Verbatim}
  \end{actionenv}
  \uncover<+ ->{More text}
\end{frame*}
```