



4-Heights[®] PDF Web Viewer

Version 2.12.0



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1 Introduction

1.1 Description

The 4-Heights® PDF Web Viewer is a compact, highperformance, high-quality viewer for PDF documents, offering a multitude of navigational and display options. It runs entirely in a web browser or JavaScript/WebAssembly container.

1.2 Features

- Fill out form fields (check boxes, radio buttons, list boxes, drop down, text fields)
- Navigate manually (user action) or programmatically through a document
- Select different layout modes: actual size, fit to width, fit to page
- Rotate the page display
- Show thumbnails and use them for navigation
- Show outlines (bookmarks) and use them for navigation
- Annotations visible in sidepane
- Change language of the GUI (currently English, German and French supported)
- Create, edit and delete annotations
 - Sticky-note annotations
 - Ink annotations (free-hand drawings)
 - Predefined text stamp annotations (Draft, Approved, etc.)
 - Use a PDF's pages as stamp annotations
 - Image stamp annotations
 - Free-text annotations
 - Text highlight annotations (highlight, strike out, underline, squiggly)
 - Rectangle and ellipse annotations
- Touch handling for mobile devices
- Enter password to open encrypted PDF documents
- Read document from file, URL or blob
- Support storing annotations in the Forms Data Format (FDF)
- Prevent the modification and deletion of all annotations except the currently configured author's
- Viewing-only mode with annotation editing and form filling disabled

1.3 Supported Input and Output Formats

- PDF 1.x (PDF 1.0, ..., PDF 1.7)
- PDF 2.0
- PDF/A-1, PDF/A-2, PDF/A-3
- FDF

1.4 Conformance

Standards:

- ISO 32000-1 (PDF 1.7)
- ISO 32000-2 (PDF 2.0)
- ISO 19005-1 (PDF/A-1)

- ISO 19005-2 (PDF/A-2)
- ISO 19005-3 (PDF/A-3)

1.5 Supported Browsers

- Chrome 63+
- Firefox 55+
- Edge 41+
- Safari 11.0.3+

'+' indicates the minimum supported version.

2 Installation and Deployment

The 4-Heights® PDF Web Viewer comes as a ZIP archive, whose content is as follows:

Sub-Directory	Description
doc	License terms and this manual
webapp	<ul style="list-style-type: none">■ <code>index.html</code>: An example HTML that uses the 4-Heights® PDF Web Viewer■ <code>.htaccess, web.config</code>: Server configuration files for Apache and Windows IIS
webapp/pdfwebviewer	<p>Web viewer files:</p> <ul style="list-style-type: none">■ <code>pdf-web-viewer.js</code>■ <code>pdf-web-veiwer.css</code>■ <code>PdfViewing.data</code>■ <code>PdfViewing_Main.js, PdfViewing_Main.wasm</code>■ <code>PdfViewing_Worker.js, PdfViewing_Worker.wasm</code> <p>Source code mapping files for development:</p> <ul style="list-style-type: none">■ <code>pdf-web-viewer.development.js</code>■ <code>pdf-web-viewer.development.map.js</code>

To deploy the 4-Heights® PDF Web Viewer proceed as follows:

1. Download the ZIP archive from the “Licenses and Product Kits”-area of your account at <https://www.pdf-tools.com/>. If the 4-Heights® PDF Web Viewer is not listed there, please contact pdfsales@pdf-tools.com to obtain an evaluation license.
2. Extract the ZIP archive to a suitable location.
3. Add your license key in `index.html` at the designated location.
4. Deploy the `webapp` sub-directory to your web server. The development files `webapp/pdf-web-viewer.development.js` and `webapp/pdf-web-viewer.development.map.js` should be removed.

2.1 Changing the Default Folder Structure

If you want to change the location of the `pdfwebviewer` directory with respect to `index.html`, then do the following changes to `index.html`:

- Adapt the path to `pdf-web-viewer.js`.
- Adapt the path to `pdf-web-viewer.css`.
- Adapt the `window.PDFTOOLS_FOURHEIGHTS_PDFVIEWING_BASEURL` variable to point to the correct destination, e.g:
 - `"./new/path/to/pdfwebviewer"` (relative to `index.html`)
 - `"file:///e:/electron-app/pdfwebviewer"` (absolute file path)
 - `"http://myserver.org/file/viewer/pdfwebviewer"` (absolute file path)

2.2 Setup Windows IIS

To serve the 4-Heights® PDF Web Viewer on a Windows IIS web server, copy the contents of the `webapp` folder into the desired directory on the web server.

The configuration file `web.config` contains the MIME types mapping for the types used in the web viewer. Apart from `web.config` there is also `%SYSTEMROOT%\System32\inetsrv\Config\applicationHost.config` and depending on the IIS version this file already contains some of the MIME type mapping entries. In this case the duplicate entries should be removed from `web.config`.

2.3 Setup Apache

To run the viewer on an Apache web server, copy the contents of the `webapp` folder to the document root of the target web server. The file `.htaccess` contains the caching settings for the viewer files.

2.4 License Keys

The 4-Heights® PDF Web Viewer requires a valid license in order to run. This key must be passed as a second argument to the `PdfWebViewer` constructor. (See `index.html`.)

A license key is bound to a specific domain, e.g. `example.com`. This domain is checked at runtime by the 4-Heights® PDF Web Viewer and compared against the license.

2.4.1 Troubleshooting

License Key Cannot Be Set

If the license key cannot be set, the call to the `PdfWebViewer` constructor results in an error.

Possible Causes:

- There is a typo in the key.
- A copy-paste operation has altered the symbol characters in the key, such as the commas.
- The key has a wrong format.
- The key belongs to a different product.
- The key is an evaluation license key and it has expired.

Solution:

Make sure the key is issued for the 4-Heights® PDF Web Viewer and has the following format:

```
<4H,V2,VIEWWEB,XXXXXXXXXXXXXXXXXXXX>
```

If an evaluation license key has expired and you would like to extend the period of evaluation, then please contact pdfsales@pdf-tools.com for a new evaluation license key.

License Check Fails at Runtime

In this case, the license can be set and the call to the constructor `PdfWebViewer` is successful. But later, when opening a PDF document, an error is generated with the message: "The current license does not permit running the product on this domain."

Possible Causes:

- The license key is not meant to be used with the current domain.

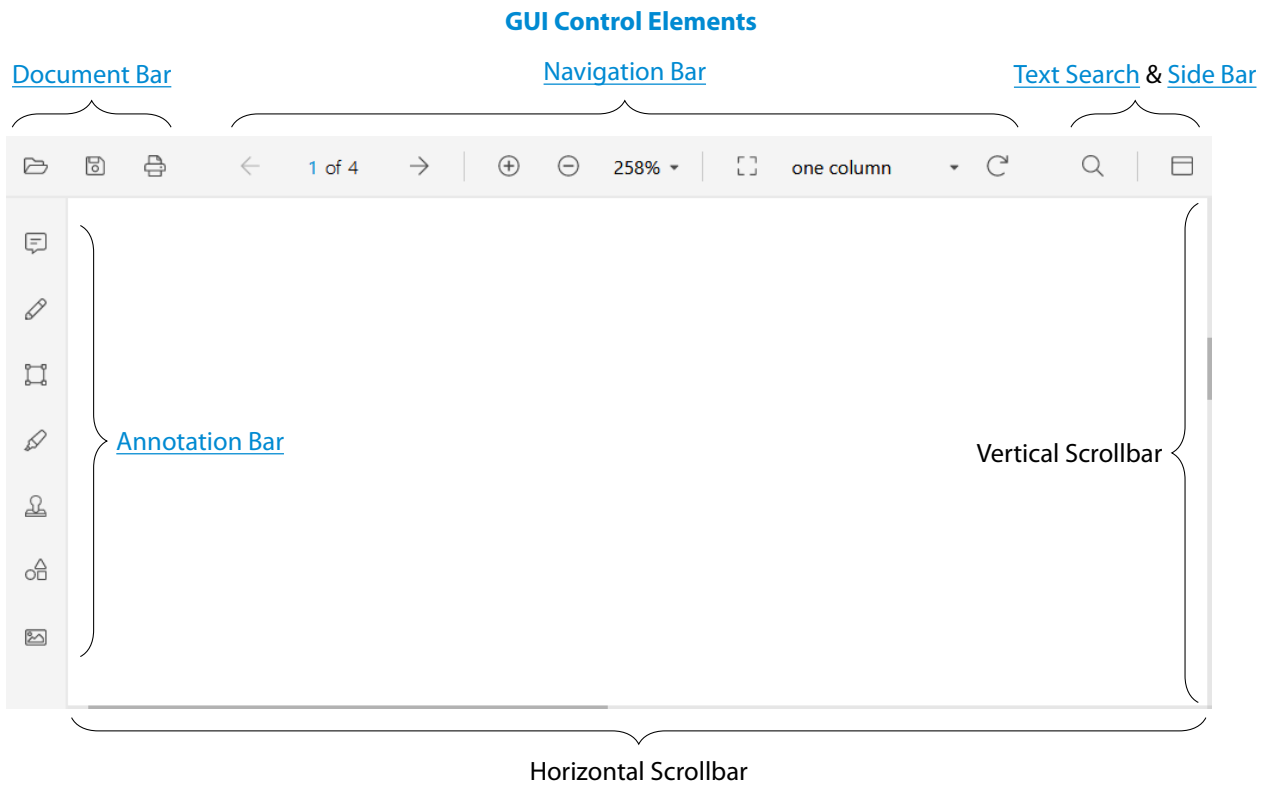
Solution:

Make sure that the domain on which the 4-Heights® PDF Web Viewer is running matches the domain to which the license key is registered.

3 User's Guide

3.1 Graphical User Interface

Once a PDF is opened, the graphical user interface of the 4-Heights® PDF Web Viewer presents itself as depicted below.



3.1.1 Document Bar

This bar comprises the following document-level operations:

- Open a new document. The 4-Heights® PDF Web Viewer also allows to open a document by drag-and-drop.
- Save the currently displayed document. This triggers the browser-specific download action.
- Print the currently displayed document. A print dialog appears that lets the user select the pages to print. The selected pages are then rendered into images and handed over to the browser's print dialog.

Modified Documents: When trying to open a new document without saving the currently modified document, a dialog is shown to let the user choose whether to save or discard the current document.

When closing the web browser (tab) or navigating in the browser history, no such dialog is shown.

Printing: The rendering-based printing architecture has the following implications:

- The time and memory used while preparing the print depends on the number of selected pages.
- Certain elements such as text and vector graphics can turn out slightly blurred on the printout, because the printer's resolution can exceed the rendering resolution, which is set to 150 DPI.

3.1.2 Navigation Bar

This bar comprises navigation and viewing operations.

Page Navigation

A document's pages can be navigated by:

- The arrow buttons in the navigation bar.
- A scrolling action triggered by operating the scroll bars, the mouse wheel, or a swipe gesture on touch devices.
- The thumbnails, outline items, or annotation comments displayed in the side bar.

Page Display

Zoom

The view's zoom factor can be adjusted by:

- The "plus" and "minus" buttons.
- The zoom selection drop-down button.
- The "CTRL and mouse wheel" action or a pinch gesture on touch devices.

Fit Mode

The view can fit a document's page, and thereby change the zoom factor and the scroll position, by selecting one of the following fitting modes:

Actual size Set the zoom factor to 100%.

Fit width Set the zoom factor such that width of the current page fits the width of the view.

Fit page Set the zoom factor such that the current page fits into the view.

Page Layout

The page layout can be chosen among the following:

- Continuous display: The scrollable area comprises all pages of a document.
 - One column** Display the pages in a single column.
 - Two column left** Display the pages side by side with odd-numbered pages on the left and even-numbered pages on the right.
 - Two column right** Display the pages side by side with odd-numbered pages on the right and even-numbered pages on the left.
- Single page display: The scrollable area is confined to a single page or two facing pages.

Single page Display a single page.

Two page left Display two pages side by side with the odd-numbered page on the left and the even-numbered page on the right.

Two page right Display two pages side by side with the odd-numbered page on the right and the even-numbered page on the left.

Rotation

The page display can be rotated by means of the “rotate” button. This does not modify the document.

3.1.3 Text Search

Text can be searched in the document by clicking on the search button, which opens a text search area.

Text search is incremental: As soon as a text is typed into the search field, the first resulting hit is highlighted.

Hits can be navigated by the arrow buttons or by pressing “enter”.

The search can be configured by clicking on the wrench button as follows:

Case sensitive Toggle the search’s case sensitivity.

Wrap search Toggle whether navigating through the search hits wraps from the end of the document to the beginning.

3.1.4 Side Bar

The side bar’s visibility is toggled by clicking on the side bar button. When visible, this bar offers three tabs.

Thumbnails

When activating the “Pages” tab, then thumbnails of the document’s pages are shown in the side bar. Clicking on a thumbnail navigates to the respective page.

Outline

When activating the “Outline” tab, then the document outline is shown in the side bar as a tree of potentially expandable outline items, also known as “bookmarks”.

Clicking on an outline item navigates to the destination associated with this item. Depending on the type of destination, this may not only change the active page but also the zoom factor.

Note that not all documents have an outline.

Annotations

When activating the “Annotations” tab, then an overview of the document’s annotations is shown in the side bar.

In this overview, every annotation is listed with the following constituents:

Icon Equivalent to the icons shown in the [Annotation Bar](#), additionally colored by the annotations main color.

Author Only shown if set for this annotation.

Date and time Indicates when the annotation was created.

Subject Only shown if set for this annotation.

Text This is the text associated with the annotation.

3.1.5 Annotation Bar

Annotations are remarks placed on a document's pages by a reader of the document. They are not part of the actual page content and can easily be removed.

The annotation bar contains buttons for creating new annotations. The following annotation types are supported:

- [Sticky Note Annotation](#)
- [Ink Annotation](#)
- [Free-Text Annotation](#)
- [Highlight Annotation](#)
- [Rectangle and Ellipse Annotations](#)
- [Stamp Annotation](#)

Once a button is selected, the viewer goes into a mode in which clicking onto a page starts the creation of the selected type of annotation.

All annotation types support the entry of a text to be shown in a popup or—in the case of [Free-Text Annotations](#)—directly on the page. An annotation popup is a small window that shows the text, the author, the date and time of creation and the subject. A popup can have two states: closed (invisible) or open (visible).

Every annotation has a primary color.

Annotations can be stored directly in a PDF or outside of a PDF in an additional FDF file.

The remainder of this section describes the supported annotation types.

Sticky Note Annotation

A sticky note consist of an icon placed on a page.

Ink Annotation

An ink annotations consists of free-hand lines drawn onto a page. The line color and thickness can be adjusted. All lines pertaining to a single annotation are contained on the same page and have the same color and thickness.

Free-Text Annotation

Free-text annotations are the only annotations which do not have an annotation popup. The annotation text is drawn in a rectangular area directly on the page.

Free-text annotations support basic text formatting.

Highlight Annotation

A highlight annotation is used to highlight text by either of the following methods:

- Overlay with a color
- Underline
- Underline with a squiggly line
- Strike through

Rectangle and Ellipse Annotations

Rectangle and ellipse annotations are used to draw rectangles and ellipses in a specified color onto the page.

Stamp Annotation

Stamp annotations are used to place a predefined text or image onto the page.

Text Stamp Annotation

The following predefined texts can be selected from:

- "Approved" (default)
- "Not Approved"
- "Draft"
- "Final"
- "Completed"
- "Confidential"
- "For Public Release"
- "Not For Public Release"
- "Void"
- "For Comment"
- "Preliminary Result"
- "Information Only"

In contrast to other annotation types, text stamp annotations come in fixed predefined colors.

Image Stamp Annotation

When clicking on the image stamp annotation button, a file selection dialog opens for the user to select an image file.

The following image file formats are supported:

- BMP (1, 2, 4, 8, 24 bit)
- GIF (2 to 8 bit)
- JBIG2 (lossless compression)
- JPEG, JPEG2000 and JPEGLS (Grayscale, RGB)
- PBM and PNG (1 to 8, 24 bit)
- TIFF:
 - Bitonal : uncompressed, CCITT G3, CCITT G32D, CCITT G4, LZW, ZIP, Packbits
 - Grayscale, RGB and CMYK: uncompressed, LZW, JPEG, JPEG (old), ZIP, Packbits

3.1.6 Touch Handling

When the viewer is used on a mobile device, touch handling is enabled. The following is an overview of the touch handling in different contexts.

Touch Gestures on Document

Tap A short tap on a menu item or context menu executes the equivalent of a mouse click.

Touch Move A touch and move with one finger scrolls the document up and down or left and right.

Two Touches Two fingers can be used to adjust the zoom by pinching or stretching the distance between the fingers.

Two Touches Move A touch and move with two fingers move the document in any direction.

Touch Gestures on Annotation

Tap A short tap on an annotation opens a context menu for the given annotation type.

Touch Move After selecting an annotation with a tap, a touch and move on the annotation (except highlight annotations) moves the position of the annotation.

Touch Gestures While Creating Annotation

Sticky Note After selecting the sticky note from the annotation bar, a tap places the sticky note at the tapped location.

Free-Text Annotation After selecting the free-text annotation from the annotation bar, touch and drag defines the annotation's rectangle.

Text Stamp Annotation After selecting the text stamp annotation from the annotation bar, touch and drag defines the stamp's size while preserving the correct aspect ratio for the selected text.

Highlight Annotation Text is selected with a touch and drag on the text.

Ink Annotation Touch and drag is used to draw the lines of an ink annotation.

3.2 Viewing-Only Edition

The 4-Heights® PDF Web Viewer comes in a “viewing-only” edition, which is configured in the license key. This edition has the following limitations:

- Saving the PDF results in an error.
- Creating annotations results in an error.

Because of these limitations it is recommended to disable these functionalities by doing the following:

- Set `viewer.permissions.allowSaveFile = false`
- Remove all the modules from the options, i.e. remove all entries from the `modules` list.

Currently the user interface allows to move, delete, and edit annotations. Saving the document is, however, not possible.

3.3 Range Requests

When opening a PDF with the `openUri` method, the 4-Heights® PDF Web Viewer is capable of using “HTTP range requests” to load only those parts of the PDF needed for the current display. This feature can cut down initial load times for large PDFs considerably.

Range requests must, however, be supported by the host that serves the PDF. Otherwise, the 4-Heights® PDF Web Viewer needs to download the complete PDF prior to start displaying.

A web server needs to set the following flags to allow range requests:

Range Request Settings

Key	Value	Comment
<code>Access-Control-Expose-Headers</code>	<code>Content-Length</code> <code>Accept-Ranges</code> <code>Content-Range</code>	These headers have to be contained in a response from the host in order to allow range requests.
<code>Access-Control-Allow-Headers</code>	<code>range</code>	The request from the viewer has to be allowed to contain <code>range</code> in the request header.

3.4 General Limitations

Due to the restrictions given in the web environment, there are some limitations to the capabilities of the 4-Heights® PDF Web Viewer, as listed below.

3.4.1 Color Management

The 4-Heights® PDF Web Viewer uses an RGB color space for rendering. There may be some noticeable differences when printing a document that uses CMYK color spaces.

Effect: The colors of non-RGB content can differ slightly from the original when printing.

3.4.2 System Fonts

A font referenced in a PDF can be either embedded in the PDF or it is assumed to be present on the host system. Due to browsers protection mechanisms, downloaded JavaScript such as the 4-Heights® PDF Web Viewer is not allowed to directly access system fonts. The 4-Heights® PDF Web Viewer analyzes the referenced fonts and replaces them with one of the standard fonts packaged with the 4-Heights® PDF Web Viewer. Due to this replacement, glyph shapes can be altered or not rendered at all, e.g. for CJK, Cyrillic or other alphabets.

Effect: Texts that use non-embedded fonts which use special glyphs may be rendered distorted or not at all.

Note: This issue can be avoided by converting a PDF to PDF/A before viewing. This ensures that all fonts are embedded.

4 Interface Reference

4.1 Enumerations

4.1.1 PdfPageLayoutMode

Name	Description
SINGLE_PAGE	Display a single page at a time.
ONE_COLUMN	Display a Column of pages.
TWO_COLUMN_LEFT	Display two Columns of pages next to each other. The first page will be on the left.
TWO_COLUMN_RIGHT	Display two Columns of pages next to each other. The first page will be on the right.
TWO_PAGE_LEFT	Display two pages next to each other. The first page will be on the left.
TWO_PAGE_RIGHT	Display two pages next to each other. The first page will be on the right.

4.1.2 StampAnnotationColor

Name	Description
GREEN	The stamp annotation has color green.
RED	The stamp annotation has color red.
BLUE	The stamp annotation has color blue.

4.2 WebViewerOptions

The 4-Heights® PDF Web Viewer provides many options to be configured in `index.html`. In `index.html` you can see how to use these options.

Name	Type
viewer	ViewerOptions
annotation	AnnotationOptions
forms	FormsOptions
modules	CanvasModule[]

4.2.1 ViewerOptions

Name	Type
general	GeneralOptions
sidebar	SidebarOptions
permissions	PermissionOptions
callbacks	Callbacks

GeneralOptions

Name	Type
user	string
language	'en' 'de' 'fr' 'it' undefined
annotationBarPosition	'top' 'left' 'right' 'bottom'
promptOnUnsavedChange	boolean
searchMatchColor	string
textSelectionColor	string
pageLayoutModes	PdfPageLayoutMode []
defaultZoomLevels	number []
pageShadow	CanvasShadowStyles undefined
viewOnly	boolean undefined

CanvasShadowStyles

Name	Type
shadowBlur	number
shadowColor	string
shadowOffsetX	number
shadowOffsetY	number

SidebarOptions

Name	Type
thumbnailNavigation	boolean
outlineNavigation	boolean
annotationNavigation	boolean

PermissionOptions

Name	Type
allowFileDrop	boolean
allowSaveFile	boolean
allowOpenFile	boolean
allowPrinting	boolean undefined
enableSearch	boolean

Callbacks

Name	Type
onOpenFileButtonClicked	(() => void) undefined
onSaveFileButtonClicked	(() => void) undefined

4.2.2 AnnotationOptions

Name	Type
pdfStampFiles	PdfStampsFile [] undefined
stamps	(TextStampSetting ImageStampSetting PdfStampSetting)[]
colors	AnnotationColorOptions
fonts	AnnotationFontOptions
highlightOpacity	number
strokeWidths	number[]
defaultBorderWidth	number

defaultStampWidth	number
selectedStamp	number
freetextBorderWidth	number undefined
hideAnnotationSubject	boolean undefined
trackHistory	boolean undefined
hideOnDelete	boolean undefined
onlyAuthorCanEdit	boolean undefined

PdfStampsFile

Name	Type
pdfStampFileName	string
data	string

TextStampSetting

Name	Type
translation_key	string undefined
text	string undefined
thumbnail	string undefined
color	StampAnnotationColor

ImageStampSetting

Name	Type
image	string undefined
thumbnail	string undefined
name	string undefined

PdfStampSetting

Name	Type
pdfStampFileName	string
name	string
pageNumber	number
thumbnail	string undefined
aspectRatio	number undefined

AnnotationColorOptions

Name	Type
highlightColors	string[]
foregroundColors	string[]
backgroundColors	string[]
defaultHighlightColor	string
defaultForegroundColor	string
defaultBackgroundColor	string
defaultHighlightAnnotationColor	string undefined
defaultFreetextBackgroundColor	string undefined
freetextBackgroundColor	string undefined
defaultInkColor	string undefined
defaultStickyNoteColor	string undefined

AnnotationFontOptions

Name	Type
fontFamilies	string[]
fontSizes	number[]
defaultFontFamily	'Helvetica' 'Times' 'Courier' 'Symbol' 'ZapfDingbats'
defaultFontSize	number

defaultFreetextFontFamily	'Helvetica' 'Times' 'Courier' 'Symbol' 'ZapfDingbats' undefined
---------------------------	---

defaultFreetextFontSize	number undefined
-------------------------	--------------------

4.2.3 FormsOptions

Name	Type
enabled	boolean

4.2.4 CanvasModule

Name	Type
allowInViewOnly	boolean

5 Version History

5.1 Changes in Version 2

- **New** support for filling form fields:

- text fields
- check boxes
- radio buttons
- list boxes
- drop down

This feature can be enabled or disabled with the new option `WebViewerOptions.forms.enabled`.

- **New** support for pre-configuring a PDF whose pages are to be made available as stamp annotations.
- **New** viewing-only mode with disabled editing of annotations and form filling capability. This mode is entered automatically if the license does not support editing. Additionally, it can be enabled or disabled with the new option `WebViewerOptions.viewer.general.viewOnly`.
- **New** support for preventing the modification and deletion of all annotations except the currently configured author's. This restriction can be enabled or disabled with the new option `WebViewerOptions.annotation.onlyAuthorCanEdit`.
- **New** feature double-click selects word.
- **Improved** scrolling sensitivity for mobile devices.
- **Changed** side pane. Title texts are substituted by icons.

6 Licensing, Copyright, and Contact

PDF Tools AG is a world leader in PDF (Portable Document Format) software, delivering reliable PDF products to international customers in all market segments.

PDF Tools AG provides server-based software products designed specifically for developers, integrators, consultants, customizing specialists and IT-departments. Thousands of companies worldwide use our products directly and hundreds of thousands of users benefit from the technology indirectly via a global network of OEM partners. The tools can be easily embedded into application programs and are available for a multitude of operating system platforms.

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