

AcroTeX.Net

The icon-appr Package

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Table of Contents

1	Introduction	3
2	Methods for non-pdfmark drivers	3
3	Methods for pdfmark drivers	4
3.1	The JavaScript approach	4
3.2	The purely EPS approach	6
4	Parameters controlling the icon appearance for push buttons	7

1. Introduction

In this package, we provide commands and methods for creating icon appearances for form field buttons, which includes push buttons, check box buttons, and radio buttons. Below are examples of the three types of buttons having icon appearances, rather than their customary appearances:

For the check box and radio buttons, the Girl is 'off' and the Man is 'on'

Push button Check box Radio buttons

The two sections that follow document the environment, commands, and methods for producing the above results. The above buttons are used in the demo files, these are found in the examples folder:

- `examples/icon-appr.exmpl.tex`
- `examples/pdfmark-drivers/icon-appr-pb.tex`
- `examples/pdfmark-drivers/icon-appr-eps.tex`
- `examples/pdfmark-drivers/icon-appr-eps-transp.tex`

The first one listed above is for the `pdflatex`, `lualatex`, and `xelatex` drivers (applications), the latter three are designed for users of `dvips` or `dvipsone`.

*eforms package
required*

The `eforms` package, dated 2018/11/10 or later, is required to create buttons with icon appearances, this is because, as of this writing, the form fields produced by `hyperref` do not support the necessary markup to produce icon appearances.

2. Methods for non-pdfmark drivers

*pdflatex
lualatex
xelatex*

The supported 'non-**pdfmark**' drivers are `pdflatex`, `lualatex`, and `xelatex`. To create icon appearances, embed the icon files with the `\embedIcon` command from within the embedding environment. This occurs in the preamble of the document.

```
\begin{embedding}
\embedIcon[⟨KV-pairs⟩]{⟨path⟩}
...
\end{embedding}
```

The name key

The `\embedIcon` embeds the icon file (`⟨path⟩`) in the document; it can then be referenced multiple times without significantly increasing the file size. The two relevant key-values (`⟨KV-pairs⟩`) are `name=⟨name⟩` and `hyopts={⟨various⟩}`. Internally, `⟨name⟩` is made into a control sequence (`\⟨name⟩`) which is used to reference the embedded icon file in the form field markup. Normally, `⟨name⟩` consists of letters, no active characters allowed; if `⟨name⟩` contains non-letters, its name may be referenced using the

The `\csOf` cmd `\csOf` command (`\csOf{<name>}`). The other key-value pair is `hyopts={<various>}`, the value `<various>` are key-values of the `\includegraphics` command, which is used in the background. Passing any key-value through to `\includegraphics` may or may not have an effect. One useful key is the `page` key; when `<path>` leads to a multi-page PDF file, and `xelatex` is *not being used*, `page=<num>` retrieves page `<num>` from the PDF document.

Example. We reproduce part of the file `icon-app-exmpl.tex`. First, in the preamble, embed all icon files to be used.

```
\begin{embedding}
\embedIcon[name=mani]{graphics/man1.pdf}
\embedIcon[name=girl]{graphics/girl.pdf}
\embedIcon[name=scot]{graphics/scot.pdf}
\end{embedding}
```

From these declarations, the commands `\mani`, `\girl`, and `\scot` are defined. Now in the body of the document, we create a push button:

```
\pushButton[%
\TP{1}\BG{}S{S}
\I{\csOf{mani}} % normal appearance, where we use \csOf to demonstrate its use
\RI{\girl} % rollover appearance, here, we reference the icon using \girl
\IX{\scot} % down appearance, we reference the icon using \scot
]{myButton}{50bp}{50bp}
```

The same techniques work for choice boxes and radio button fields. Refer to sample file `icon-app-exmpl.tex` for a working example.

3. Methods for pdfmark drivers

dvips For **pdfmark** drivers (`dvips` and `dvipsone`), there are two techniques that have been developed. These techniques were developed because EPS files are the only graphics files `dvips` (and `dvipsone`) work with.

- **JavaScript approach:** Acrobat JavaScript has a method for embedding a number of graphics file formats as icons, which can then be used as icon appearance faces. This method requires the Acrobat application to open the newly created PDF file, after Distiller (or `ps2pdf`) has created the PDF file. Any supported graphics file format can be used. The method is explained in detail in [Section 3.1](#).
- **Purely EPS approach:** We can use exclusively EPS files for icon appearances; in fact, the examples given in the **Introduction** section on page 3 were created by this method. Details are found in [Section 3.2](#).

3.1. The JavaScript approach

aeb_pro package **Requirements:** The \LaTeX package `aeb_pro` is required as it supplies the JavaScript code. Distiller or `ps2pdf` is used to create the PDF. Open the file in Acrobat where
Distiller or `ps2pdf`,
and Acrobat

the JavaScript is executed to embed referenced files as icon objects and associate icon files with push button appearances.

push buttons only

This method only applies to push buttons, not to check box or radio button fields. Again, the basic elements to use are the `\embedding` environment in the preamble and the `\embedIcon` command.

```
\begin{embedding}
\embedIcon[⟨KV-pairs⟩]{⟨path⟩}
...
\end{embedding}
```

placement key
page key

The set of key-value pairs (*KV-pairs*) of `\embedIcon` is a little different than the ones listed in [Section 2](#), these are (1) the `placement` key informs the underlying JavaScript where to place the icon file; (2) the `page` key can be used for multi-page PDF icons files to specify the number of the page to be used, this is a 0-based page number.

Syntax for the value of the placement key: The `placement` key “places” the image on the button faces of the field names listed (`myButton`). A push button has three appearance faces: normal appearance, rollover appearance, and down appearance. As a result of this, there is an optional argument that precedes the field name that determines the face of the button the icon is to appear on; the values are `[0]` (default, normal icon);¹ `[1]` (down icon); and `[2]` (rollover icon). The optional argument precedes the field name, and is shown in the example below. There must be no space between the optional argument and the field name; if you type ‘`[2]myButton`’, for example, the field name is interpreted as ‘`_myButton`’, which is incorrect.

Example. This is a modified version of the example that appears in the sample file `icon-appr-pb.tex`. We begin by embedding the icon files in the document. The target field has name ‘`myButton`’ and we place the images on it: `man1.pdf` is the normal appearance; `scot.gif` is the down appearance; and `girl.png` is the rollover appearance.

```
\begin{embedding}
\embedIcon[placement=myButton]{graphics/man1.pdf}
\embedIcon[placement={1}myButton]{graphics/scot.gif}
\embedIcon[placement={2}myButton]{graphics/girl.png}
\end{embedding}
```

Note the variety of icon file formats used.

In the body of the document, we create a push button. At the time the button is created, the icon files have not been imported and embedded, but we indicate that this button uses icon appearances by passing `\importIcons{y}` as an optional argument, *this is important.*

Important!

```
\pushButton[⟨BC⟩⟨BG⟩⟨S⟩⟨importIcons{y}⟩
⟨FB{true}⟩⟨TP{1}⟩]{myButton}{50bp}{50bp}
```

When the newly created PDF is first opened in Acrobat some JavaScript will execute and embed the icon files in the PDF, then populate the specified button faces with the specified icons.

¹When no optional argument precedes the field name, it is understood to be the normal appearance.

By the way, a single `\embedIcon` command can provide multiple push buttons with its icon; the value of `placement` can be a comma-delimited list of field names (with optional argument preceding). For example,

```
\begin{embedding}
\embedIcon[placement={myButton,[1]myOtherButton}]{graphics/man1.pdf}
...
\end{embedding}
```

Refer to `icon-appr-pb.tex` for a working example.

3.2. The purely EPS approach

graphicxsp required **Requirements.** The EPS method requires the use of the `graphicxsp` package, dated 2018/11/20 or later. Distiller or `ps2pdf` can be used to produce the PDF file; Acrobat is *not required* (unless another package requires it). It is strongly recommended that when creating check boxes or radio button fields that the newly created PDF be opened in Adobe Reader DC (or, optionally Acrobat itself) and *saved*. This will enable users of PDF-XChange Viewer/Editor to view these buttons correctly.

save the PDF!

The technique is similar to that of the non-**pdfmark** drivers. Again, we use the `embedding` environment in the preamble, but the `\embedEPS` command within the environment is used instead of `\embedIcon`.

```
\begin{embedding}
\embedEPS[<KV-pairs>]{<path>}
...
\end{embedding}
```

name key required Where `<path>` points to an EPS file. The `name=<name>` key-value is required in the optional argument `<KV-pairs>`, other key-value pairs are passed to `\includegraphics`.

Internally, `<name>` is made into a control sequence (`\<name>`) which is used to reference the embedded icon file in the form field markup. Normally, `<name>` consists of letters, no active characters; if `<name>` contains non-letters, its name may be referenced using the `\csOf` command (`\csOf{<name>}`).

The \csOf cmd

Example. This is a modified version of the example that appears in the sample file `icon-appr-eps.tex`.

```
\begin{embedding}
\embedEPS[hiresbb,name=mani]{graphics/man1}
\embedEPS[hiresbb,name=girl]{graphics/girl}
\embedEPS[hiresbb,name=scot]{graphics/scot}
\end{embedding}
```

Here, we pass the `hiresbb` key to `\includegraphics`. From this declarations, the command `\mani`, `\girl`, and `\scot` are defined. Now in the body of the document, we create a push button:

```
\pushButton[%
\TP{1}\BG{}]\S{S}
```

```

\I{\csOf{mani}} % normal appearance, where we use \csOf to demonstrate its use
\RI{\girl}      % rollover appearance, here, we reference the icon using \girl
\IX{\scot}      % down appearance, we reference the icon using \scot
]{myButton}{50bp}{50bp}

```

Note that this is the same markup as was presented in [Section 2](#). The same techniques work for choice boxes and radio button fields. Refer to sample file `icon-appr-eps.tex` for a working example.

When EPS methods are used, the Adobe transparency model can be used (Distiller required). See the sample file `icon-appr-eps-transp.tex`.

4. Parameters controlling the icon appearance for push buttons

The **MK** entry is used to provide an *appearance characteristic dictionary* containing additional information for constructing the annotation's appearance. The `eforms` package has key-value pairs that populates the **MK** dictionary; we describe the entries in the dictionary, these entries are entered through the optional argument of a `\pushButton` command. In the listing below, we give the key-value pairs, the first is the original key scheme, the second is the more user-friendly key. Additional details can be found in `eformman.pdf`, the documentation of the `eform` package.

I Indirect reference to the normal appearance of an icon. The keys used by `eforms` are `\I` and `normalappr`.

RI Indirect reference to the rollover appearance of an icon. The keys are `\RI` and `rollappr`.

IX Indirect reference to the down appearance of an icon. The keys are `\IX` and `downappr`.

Note. When importing icon appearances using JavaScript ([Section 3.1](#)), the above three keys are not used explicitly (JavaScript sets these key-value entries); use instead the key-value pair `\importIcons{y}`, as seen in the example given in [Section 3.1](#).

IF The *icon fit dictionary*. The entries of the **IF** follow:

SW (name; optional) The circumstances under which the icon should be scaled inside the annot rectangle. The key is either `\SW` or `scalewhen`.

A always scale (the default value).

KVP: `\SW{A}` or `scalewhen=always`.

B Scale only when the icon is bigger than the annotation rectangle.

KVP: `\SW{B}` or `scalewhen=iconbig`.

S Scale only when the icon is smaller than the rectangle.

KVP: `\SW{S}` or `scalewhen=iconsmall`.

N Never Scale.

KVP: `\SW{N}` or `scalewhen=never`.

S (name; optional) The type of scaling to use the annot rectangle. The key to use is `\ST` or `scale`.

A *Anamorphic scaling*: Scale the icon to fill the annotation exactly, without regard to the original aspect ratio.

KVP: `\ST{A}` or `scale=nonproportional`.

P *Proportional scaling*: Scale the icon to fit the width or height of the rectangle while maintaining the icon's original aspect ratio (ratio width to height) (the default).

KVP: `\ST{P}` or `scale=proportional`.

A (array; optional) An array of two numbers between 0.0 and 1.0 indicating the fraction of the left over space to allocate at the left and bottom of the icon. A value of `[0.0 0.0]` positions the icon at the bottom-left corner; a value of `[0.5 0.5]` centers it within the rectangle. This entry is only used if the icon is scaled proportionally. The default is `[0.5 0.5]` the `annot` rectangle. The key is either `\PA` or `position`. The default is `\PA{.5 .5}` (no comma between numbers), in the user friendly style `position={.5 .5}` (no comma between numbers).

FB (Boolean; optional) If `true`, indicates that the button appearance should be scaled to fit fully within the bounds of the annotation without taking into consideration the line width of the border. The default is `false`. The key is `\FB` or `fitbounds`; the default is `\FB{false}` or `fitbounds=false`.

TP a code indicating position of text relative to icon. The key is either `\TP` or `layout`.

0 No icon; caption only. KVP: `\TP{0}` or `layout=labelonly`.

1 No caption; icon only. KVP: `\TP{1}` or `layout=icononly`.

2 Caption below icon. KVP: `\TP{2}` or `layout=icontop`.

3 Caption above icon. KVP: `\TP{3}` or `layout=iconbottom`.

4 Caption to the right of icon. KVP: `\TP{4}` or `layout=iconleft`.

5 Caption to the left of icon. KVP: `\TP{5}` or `layout=iconright`.

6 Caption overlaid on the icon. KVP: `\TP{6}` or `layout=labelover`.

That's it, now, back to my retirement!