Include RSP and other non-Sweave vignettes in R packages

Henrik Bengtsson

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Abstract

This document describes how to include RSP and other non-Sweave vignettes in R packages such that they appear in the R help system. As described in the first part of this document, generic support for vignettes of any format (not only Sweave) was added in R v3.0.0 making it straightforward to include vignettes of any format including RSP-embedded vignettes.

To include non-Sweave vignettes in packages to be used also in version prior to R v3.0.0, the *R.rsp* package provides framework that is forward compatible with the R v3.0.0 framework. A package developer only needs to copy three files (*dummy.Rnw*, *Makefile* and *.install_extras*) "as is" in order for the latter to work.

Keywords: R, package, vignette, static PDF

This vignette is distributed as part of the R.rsp package, which is available on CRAN.

Contents

1 Background

When building an R package, Sweave/LaTeX vignettes are recognized by R, compiled into PDFs, which are listed along with their source in the R help system, e.g. `help.start()`. These package vignettes are also being listed online on the CRAN and Bioconductor package pages.

2 Vignettes in R v3.0.0 and beyond

Starting with R v3.0.0, it is possible to include vignettes of any vignette format in R packages (not only Sweave). This is handled via a so called *vignette engine* mechanism that utilizes so called *vignette builder* packages such as *R.rsp*, *knitr* and *noweb*. For instance, a package that wish to include RSP vignettes using the *R.rsp* package, should add the following to its *DESCRIPTION* file

```
Suggests: R.rsp (>= 0.9.9)
VignetteBuilder: R.rsp
```

and the following to each of the RSP vignettes (typically as part of an RSP comment)

```
%\VignetteEngine{R.rsp::rsp}
```

This will cause all **.rsp* vignettes to be compiled and part of the package. Similar approaches can used for other types of vignettes, e.g. knitr and noweb. It is also possible to use a mix of vignette formats in the same package. For more details on how vignette are included in packages, see Section 'Writing package vignettes' of 'Writing R Extensions' part of your R installation (for instance via `help.start()`).

3 Vignettes before R v3.0.0

The instructions given in this section are intended for packages that are to be built and installed on R systems prior to R v3.0.0. They are such they are forward compatible with the recent R v3.0.0 vignette framework. This makes it particularly easy to include vignettes in packages that are supposed to support both newer and older versions of R.

If your package is only intended for R v3.0.0 and beyond, none of the below applies.

3.1 Using the default R framework

Unfortunately, in versions R v2.14.0 to R v2.15.3, static PDFs are not recognized and therefore not listed. Same is true for other PDFs that are dynamically generated during build by other means, e.g. RSP-embedded LaTeX documents. Fortunately, there is a framework to include also non-Sweave vignettes, as explained next.

3.1.1 Include static PDFs

Assume you have a static PDF named *manual.pdf* that you wish to include in your package. Then place it in the *vignettes/* directory of the package and create a corresponding *manual.Rnw* stub (in the same directory) that contains:

```
%\VignetteIndexEntry{User manual}
\documentclass{article}
\begin{document}
...
\end{document}
```

The above is a minimal valid Sweave document that is recognized by the R build system and will therefore *trigger* the vignette installation to take place. This small addition will make the PDF vignette appear when calling `browseVignettes()` as well as in the 'Overview of user guides and package vignettes' section of the package HTML help page (via `help.start()`). The drawback is that also the above "dummy" *manual.Rnw* will be listed.

3.2 Using the extended framework of the R.rsp package

Here we describe how to dynamically build and include non-Sweave vignettes, such as, but not limited to, RSP-embedded LaTeX vignettes. In order to do this, three files needs to be available in *vignettes/*:

1. *dummy.Rnw*: A "dummy" Sweave vignette file triggering R's vignette installation procedures, and
2. *Makefile*: A file with instructions emulating the post-3.0.0 R vignette mechanisms, and
3. *.install_extras*: A file specifying which (source and generated output) vignette files to *install*[1].

These files can be copied "as is" from the *R.rsp* package (see Appendix for its content) to the new package's *vignettes/* directory using:

```
filenames <- c("dummy.Rnw", "Makefile", ".install_extras")
pathS <- system.file("doc/templates", package="R.rsp")
pathD <- "vignettes"
dir.create(pathD)
pathnamesS <- file.path(pathS, gsub("^[.]", ",", filenames))
pathnamesD <- file.path(pathD, filenames)
file.copy(pathnamesS, to=pathnamesD)
```

Neither of these files need to be edited[2]. Note that the Makefile and the functions it utilizes are independent of the RSP markup language why it can also be used for other vignette formats as well. The use of custom *vignettes/Makefile* and *vignettes/.install_extras* files is described in Section 'Writing package vignettes' of 'Writing R Extensions'.

3.2.1 Improved HTML overview of vignettes

By default, the R HTML help system will list links to the PDF and the Sweave source of the vignettes. This means that above approach for including static PDFs in a package will also list the Rnw stub in this listing. As explained in 'Writing R Extensions', it is possible to override this by providing a custom *vignettes/index.html* file. It can be tedious the manually edit the *index.html* file. For this reason, if the *index.html* file is missing, then the above *Makefile* automatically builds one and populates it with the PDF and source files available according to what the vignette files specify (see also below).

3.2.2 Include RSP-embedded LaTeX vignettes

Assume you have an RSP-embedded LaTeX vignette named *manual.tex.rsp* that you wish to automatically build and have the PDF and the source being include in your package. In order for this to happen, it must be contain `\Vignette*{}` markup as illustrated below:

[1]The term *install* is used for vignettes to make it explicit that the orignal source files are located in *vignettes/*, but when compiled are copied together with the output files to *inst/doc/* of the built package. Directory *vignettes/* is *not* installed to, and therefore not available in, the built package.

[2]The reason for the `gsub()` renaming is because R does not allow the last file to installed starting with a period. Instead with use a comma as a workaround.

```
%\VignetteIndexEntry{User manual}
%\VignetteEngine{R.rsp::rsp}
\documentclass{article}
\begin{document}
...
\end{document}
```

Make sure these statements are given as LaTeX-style comments in your vignette source document. The *mandatory* `\VignetteIndexEntry{}` markup sets the title of the vignette as it will appear in the R vignette index. The `\VignetteEngine{}` markup specifies which vignette engine to use for compiling this vignette source file. This markup is actually only available in R v3.0.0, but we use it here too and somewhat imitates its behavior such that it works in any version of R. This is all taken care of by the *R.rsp* package.

Appendix

The generic Makefile file

The customized and generic *Makefile* that builds non-Sweave vignettes and any missing *index.html* file is available in *R.rsp* package directory *doc/templates/*. This *Makefile* should be copied "as is" to *vignettes/* of your package. Its content is:

```
# MACRO DEFINITIONS
RM=rm -f
R=$(R_HOME)/bin/Rscript

# TARGET DEFINITIONS
all: vignettes tex index.html

# Build all vignettes that has a %\VignetteBuild{} markup
vignettes:
    "$(R)" -e "if (getRversion() < 3) R.rsp::buildNonSweaveVignettes()"
    "$(R)" -e "if (getRversion() >= 3) unlink('dummy.Rnw')"

# Compile any TeX files for which a PDF is missing
tex:
    "$(R)" -e "if (packageVersion('R.rsp') >= '0.9.1') R.rsp::buildNonSweaveTexToPdf()"

# Create an HTML vignette index page
index.html:
    "$(R)" -e "if (getRversion() < 3) R.rsp::buildPkgIndexHtml()"

# Certain LaTeX files (e.g. bib, bst, sty) must be part of the build
# such that they are available for R CMD check.  These are excluded
# from the install using .Rinstignore in the top-level directory.
clean:
    $(RM) enginesMap.R
    $(RM) index.html.rsp
    $(RM) *.rsp.R
    $(RM) *.tex *.aux *.bbl *.blg *.log *.out *.sty *.toc
    $(RM) -r figures/
    $(RM) Makefile
```

The generic .install_extras file

The *vignettes/.install_extras* file controls which source and output vignette files should be installed and therefore be copied to the *inst/doc/* directory of the built package. The generic *.install_extras* file available by in *R.rsp* package directory *doc/templates/* contains:

```
vignettes/[^/]+[.](Rnw)$
vignettes/[^/]+[.](rsp)$
vignettes/[^/]+[.](Rasciidoc|Rhtml|Rmd|Rrst|Rtex)$
vignettes/[^/]+[.](brew)$
vignettes/[^/]+[.](asciidoc|md|str|tex)$
vignettes/[^/]+[.](r|R)$
vignettes/[^/]+[.](pdf|PDF|html|HTML)$
vignettes/dummy[.](Rnw|pdf)$
```

The "trigger" dummy.Rnw file

The "dummy" Sweave source file *dummy.Rnw* file available by in *R.rsp* package directory *doc/templates/*, which triggers R's vignette installation mechanism to process the *vignettes/Makefile*, contains:

```
% - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
% To build non-Sweave vignettes, place this dummy.Rnw in vignettes/
```

```
% together with the custom Makefile (also from R.rsp).  That will
% trigger R to build all non-Sweave vignettes.  The two files
% dummy.Rnw and the Makefile will not be the package installation.
% - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
%\VignetteIndexEntry{Dummy vignette to trigger the use of the Makefile}
%\VignetteEngine{R.rsp::dummy_Rnw}
\documentclass{article}
\begin{document}
\end{document}
```

The files used for creating this document

This document was created from the RSP-embedded LaTeX vignette *NonSweaveVignettes.tex.rsp* that is *installed* in the *doc/* package directory of *R.rsp*. It can manually be compiled into a PDF as:

```
pathname <- system.file("doc/NonSweaveVignettes.tex.rsp", package="R.rsp")
R.rsp::file(pathname)
```

The generated PDF can then be included into the package as a static PDF (as explained in Section 3.1.1). However, in this package we have chosen to build it dynamically during package build, by adding the RSP file to *vignettes/* as explained above.

Session information

- R version 3.0.2 Patched (2013-10-08 r64038), `x86_64-w64-mingw32`
- Locale: `LC_COLLATE=C`, `LC_CTYPE=English_United States.1252`, `LC_MONETARY=English_United States.1252`, `LC_NUMERIC=C`, `LC_TIME=English_United States.1252`
- Base packages: base, datasets, grDevices, graphics, methods, stats, utils
- Other packages: R.devices 2.7.2, R.methodsS3 1.5.2, R.oo 1.15.8, R.rsp 0.9.28
- Loaded via a namespace (and not attached): R.utils 1.27.6, tools 3.0.2

This report was automatically generated using `rfile()` of the R.rsp package. Total processing time after RSP-to-R translation was 0.02 secs.