
Introducing ReporteRs

BaselR 16 July 2015

Daniel Sabanés Bové, support by David Gohel

The Roche pRED logo is positioned in the bottom right corner of the slide. It features the word "Roche" in a bold blue font, with "pRED" in a smaller, grey, lowercase font below it. The background of the slide is a light blue gradient with a complex, abstract pattern of overlapping white and grey lines and shapes, resembling a molecular structure or a network diagram.

Roche
pRED

About the author of ReporteRs

David Gohel

- David Gohel is a ‘data-scientist’, consultant for companies
- Projects examples: shiny applications, clinical reporting automation, predictive modelling, etc.
- Contact: david.gohel@ardata.fr
- Blog: <http://davidgohel.github.io/> Includes main help pages for ReporteRs
- These slides and examples are based on David’s, thanks a lot to him!

Getting started

Installation, help and community

- Installation of CRAN versions:
`install.packages(c("rJava", "ReporteRsjars", "ReporteRs"))`
- Fixing rJava load error:
error: unable to load shared object 'C:/Users/me/Documents/R/win-library/2.13/rJava/libs/x64/rJava.dll': LoadLibrary failure: %1 is not a valid Win32 application.
→ Include the path to `jvm.dll` (e.g. `C:\Program Files\Java\jre6\jre\bin\client`) in your PATH
(Windows start button → "Path" → "Edit environment variables to for your account" → PATH
→ add the above path to the list of paths)
- Help and community:
 - Stackoverflow : [reporters]
 - Google group: <http://groups.google.com/group/reporters-package>
 - Bugs: <https://github.com/davidgohel/ReporteRs/issues>

Motivation for ReporteRs

Reporting automation

- Microsoft documents (Word, Powerpoint) are ubiquitous in corporate environments.
- Strong need for complex tabular output
- Need to decrease necessary time for
 - Statistical reporting updates
 - Graphics annotations
- Solution: ReporteRs
 - Ability to create Word, Powerpoint and HTML documents from within R
 - Flexible API to create and format tables
 - Editable vector graphics → easy annotations
 - Corporate template can be used

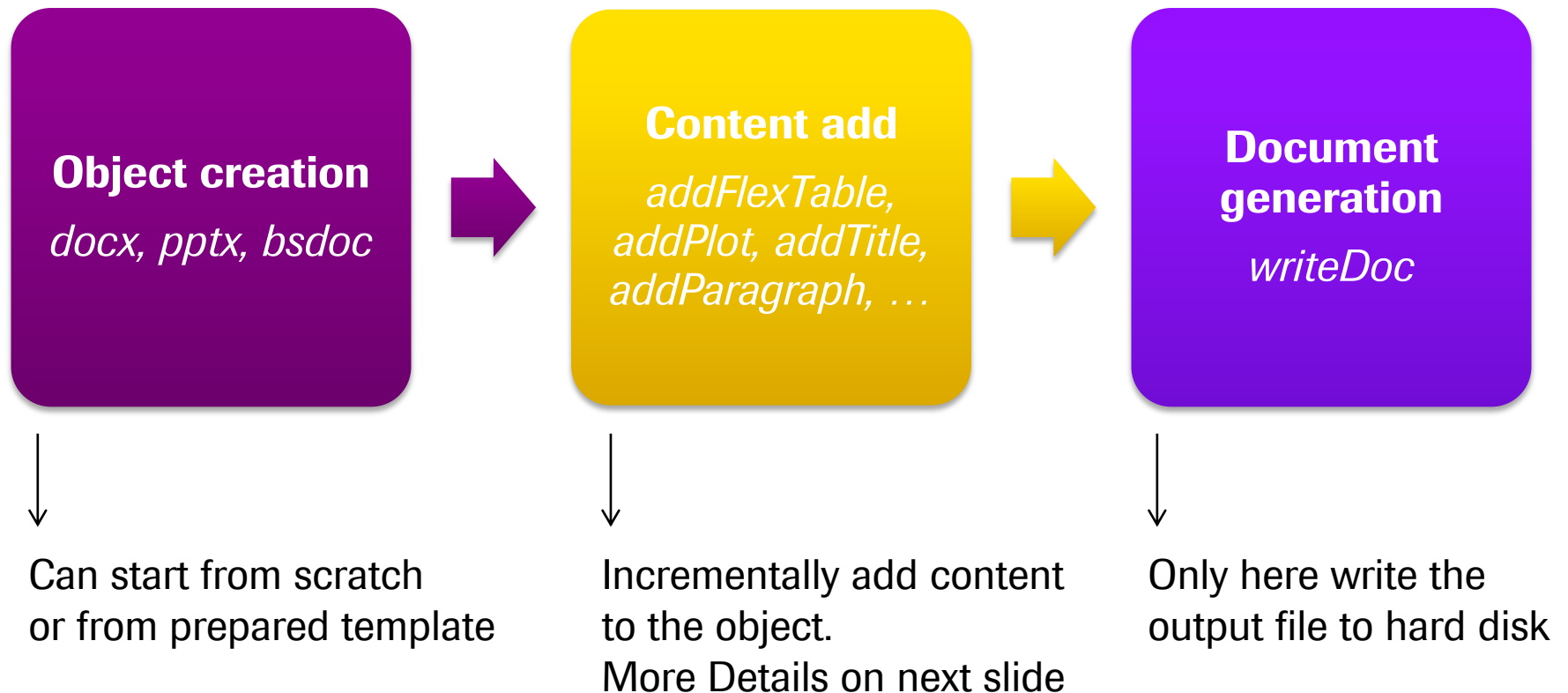
Two live demo examples

From my oncology phase 1 trials

- Example 1: Patient overview plot
 - Read data into R directly from data base
 - Create the plot
 - Export to Powerpoint
 - Clinical scientist adds annotations and corrects for data not yet in the data base
- Example 2: Dose recommendation for next patient cohort
 - Read dose limiting toxicity (DLT) data from data set
 - Compute dose recommendation in R
 - Write resulting slides to Powerpoint template
 - Add further annotations and it's ready for cohort management meeting

General workflow of ReporteRs

Overview



Main “add” functions of ReporteRs

Overview

addFlexTable

addPlot

addParagraph

addMarkdown

addTitle

addTOC

addBreakPage

addSlide

addSection

addImage

addBootstrapM
enu

addJavascript

FLEXTABLE OBJECTS

LAYOUT

- ✓ Custom table header and footer rows
- ✓ Cell merging (row or column)
- ✓ Text and paragraphs can be added anywhere in the table

FORMAT

- ✓ cells
- ✓ paragraphs
- ✓ text
- ✓ borders

WORK WITH

- ✓ docx
- ✓ pptx
- ✓ html

SIMPLE TABLE

mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
21.0	6	160.0	110	3.90	2.620	16.46	0	1	4	4
21.0	6	160.0	110	3.90	2.875	17.02	0	1	4	4
22.8	4	108.0	93	3.85	2.320	18.61	1	1	4	1
21.4	6	258.0	110	3.08	3.215	19.44	1	0	3	1
18.7	8	360.0	175	3.15	3.440	17.02	0	0	3	2
18.1	6	225.0	105	2.76	3.460	20.22	1	0	3	1
14.3	8	360.0	245	3.21	3.570	15.84	0	0	3	4
24.4	4	146.7	62	3.69	3.190	20.00	1	0	4	2
22.8	4	140.8	95	3.92	3.150	22.90	1	0	4	2
19.2	6	167.6	123	3.92	3.440	18.30	1	0	4	4
17.8	6	167.6	123	3.92	3.440	18.90	1	0	4	4
16.4	8	275.8	180	3.07	4.070	17.40	0	0	3	3
17.3	8	275.8	180	3.07	3.730	17.60	0	0	3	3
15.2	8	275.8	180	3.07	3.780	18.00	0	0	3	3
10.4	8	472.0	205	2.93	5.250	17.98	0	0	3	4
10.4	8	460.0	215	3.00	5.424	17.82	0	0	3	4
14.7	8	440.0	230	3.23	5.345	17.42	0	0	3	4
32.4	4	78.7	66	4.08	2.200	19.47	1	1	4	1
30.4	4	75.7	52	4.93	1.615	18.52	1	1	4	2
33.9	4	71.1	65	4.22	1.835	19.90	1	1	4	1
21.5	4	120.1	97	3.70	2.465	20.01	1	0	3	1
15.5	8	318.0	150	2.76	3.520	16.87	0	0	3	2
15.2	8	304.0	150	3.15	3.435	17.30	0	0	3	2
13.3	8	350.0	245	3.73	3.840	15.41	0	0	3	4
19.2	8	400.0	175	3.08	3.845	17.05	0	0	3	2
27.3	4	79.0	66	4.08	1.935	18.90	1	1	4	1
26.0	4	120.3	91	4.43	2.140	16.70	0	1	5	2
30.4	4	95.1	113	3.77	1.513	16.90	1	1	5	2
15.8	8	351.0	264	4.22	3.170	14.50	0	1	5	4
19.7	6	145.0	175	3.62	2.770	15.50	0	1	5	6
15.0	8	301.0	335	3.54	3.570	14.60	0	1	5	8
21.4	4	121.0	109	4.11	2.780	18.60	1	1	4	2

CORRELATION MATRIX

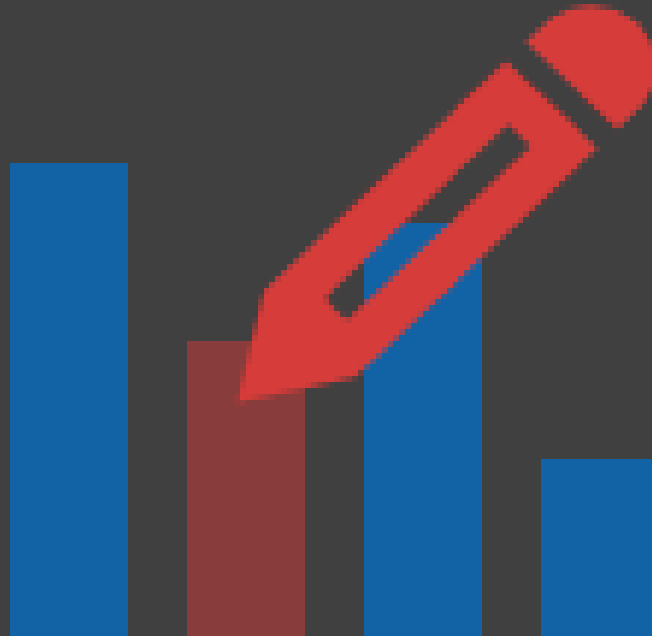
	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
mpg	1.0	-0.9	-0.8	-0.8	0.7	-0.9	0.4	0.7	0.6	0.5	-0.6
cyl	-0.9	1.0	0.9	0.8	-0.7	0.8	-0.6	-0.8	-0.5	-0.5	0.5
disp	-0.8	0.9	1.0	0.8	-0.7	0.9	-0.4	-0.7	-0.6	-0.6	0.4
hp	-0.8	0.8	0.8	1.0	-0.4	0.7	-0.7	-0.7	-0.2	-0.1	0.7
drat	0.7	-0.7	-0.7	-0.4	1.0	-0.7	0.1	0.4	0.7	0.7	-0.1
wt	-0.9	0.8	0.9	0.7	-0.7	1.0	-0.2	-0.6	-0.7	-0.6	0.4
qsec	0.4	-0.6	-0.4	-0.7	0.1	-0.2	1.0	0.7	-0.2	-0.2	-0.7
vs	0.7	-0.8	-0.7	-0.7	0.4	-0.6	0.7	1.0	0.2	0.2	-0.6
am	0.6	-0.5	-0.6	-0.2	0.7	-0.7	-0.2	0.2	1.0	0.8	0.1
gear	0.5	-0.5	-0.6	-0.1	0.7	-0.6	-0.2	0.2	0.8	1.0	0.3
carb	-0.6	0.5	0.4	0.7	-0.1	0.4	-0.7	-0.6	0.1	0.3	1.0

FEW FORMATTING OPTIONS

Group by			Statistics		
Status	Gender	Ulceration	n	mean	sd
Alive	Female	Absent	68	<i>1.693</i>	2.004*
		Present	23	2.972	2.593*
	Male	Absent	24	<i>1.468</i>	1.719
		Present	19	4.319	2.423*
Melanoma	Female	Absent	8	2.139	1.184
		Present	20	4.724	4.128*
	Male	Absent	8	3.266	4.681*
		Present	21	5.143	2.862*
Non-melanoma	Female	Absent	3	<i>1.667</i>	1.141
		Present	4	3.302	3.713*
	Male	Absent	4	2.420	2.499*
		Present	3	8.053	4.019*

*standard deviation is > 2

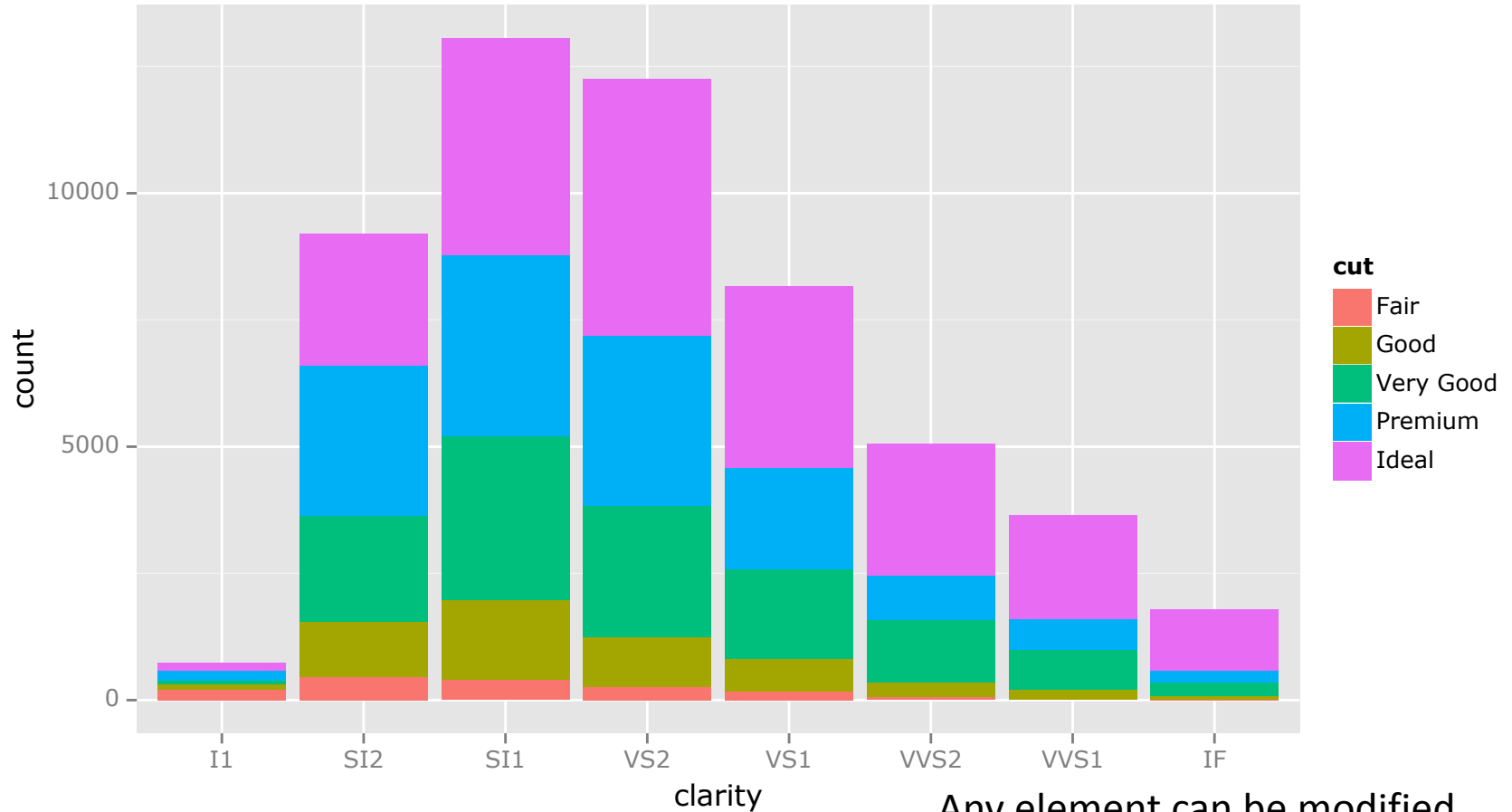
EDITABLE VECTOR GRAPHICS



FEATURES

- ✓ Standard R code
- ✓ Elements can be modified/edited within Word ou PowerPoint
- ✓ *In short, Vector graphics can be magnified infinitely without loss of quality, while pixel-based graphics cannot..*
(https://en.wikipedia.org/wiki/Vector_graphics)

GGPLOT EXAMPLE



Any element can be modified
*Use `editable=FALSE` to disable
this feature*

TEXT FORMAT [POT]

POT

'POT' OBJECTS

- ✓ Format text (bold, italic, font family, font size, etc.)
- ✓ « Piece of text », « paragraph of text »
- ✓ « + » operator to concatenate pot
- ✓ Handle footnote (only Word and HTML)
- ✓ Handle hyperlink

USAGE

- ✓ A pot object is a paragraph
- ✓ It can be inserted in a FlexTable

'POT' - EXAMPLES

Chats et *chiens*

Des canards et des lapins avec de grandes
oreilles

FORMATS SPECIFICITIES

docx

- Footnotes
- Tables of content
- Word templates can be used

pptx

- No footnote and no TOC
- PowerPoint templates can be used

bsdoc

- Footnotes
- Tables of content
- « bootstrap »
- Interactives graphs
- Can be viewed in the HTMLWidget of Rstudio

Doing now what patients need next