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# **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](mailto: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

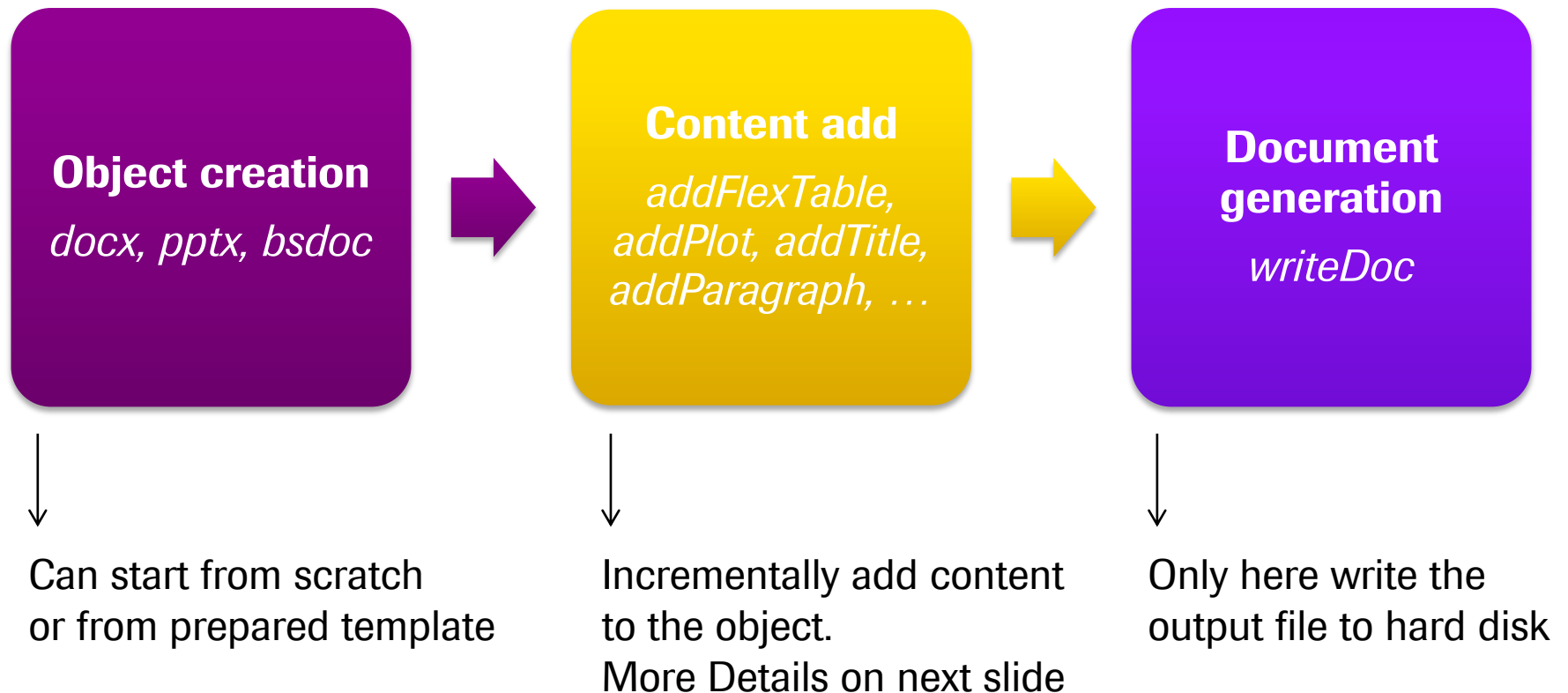
# Two live demo examples

*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

<b>mpg</b>	<b>cyl</b>	<b>disp</b>	<b>hp</b>	<b>drat</b>	<b>wt</b>	<b>qsec</b>	<b>vs</b>	<b>am</b>	<b>gear</b>	<b>carb</b>
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

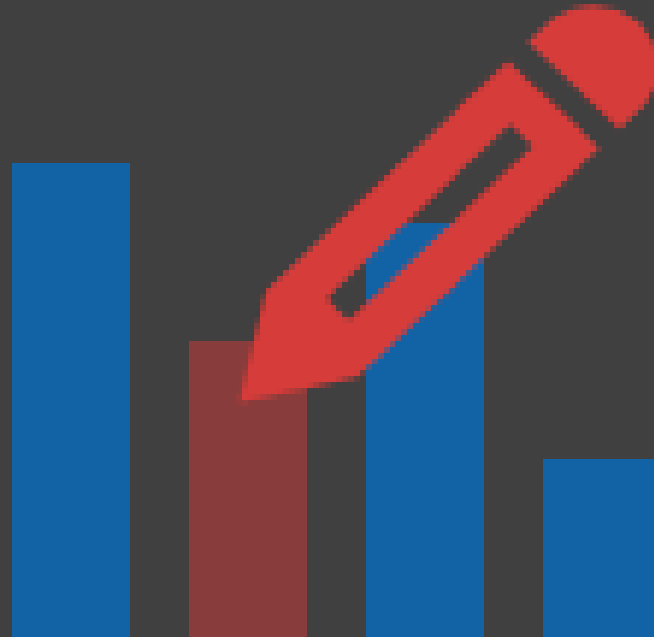
	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
mpg	1.0	-0.9	-0.8	-0.8	0.7	-0.9	0.4	0.7	0.6	0.5	-0.6
cyl	-0.9	1.0	0.9	0.8	-0.7	0.8	-0.6	-0.8	-0.5	-0.5	0.5
disp	-0.8	0.9	1.0	0.8	-0.7	0.9	-0.4	-0.7	-0.6	-0.6	0.4
hp	-0.8	0.8	0.8	1.0	-0.4	0.7	-0.7	-0.7	-0.2	-0.1	0.7
drat	0.7	-0.7	-0.7	-0.4	1.0	-0.7	0.1	0.4	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	<b>4.319</b>	2.423*
Melanoma	Female	Absent	8	2.139	1.184
		Present	20	<b>4.724</b>	4.128*
	Male	Absent	8	<b>3.266</b>	4.681*
		Present	21	<b>5.143</b>	2.862*
Non-melanoma	Female	Absent	3	<i>1.667</i>	1.141
		Present	4	<b>3.302</b>	3.713*
	Male	Absent	4	2.420	2.499*
		Present	3	<b>8.053</b>	4.019*

\*standard deviation is > 2

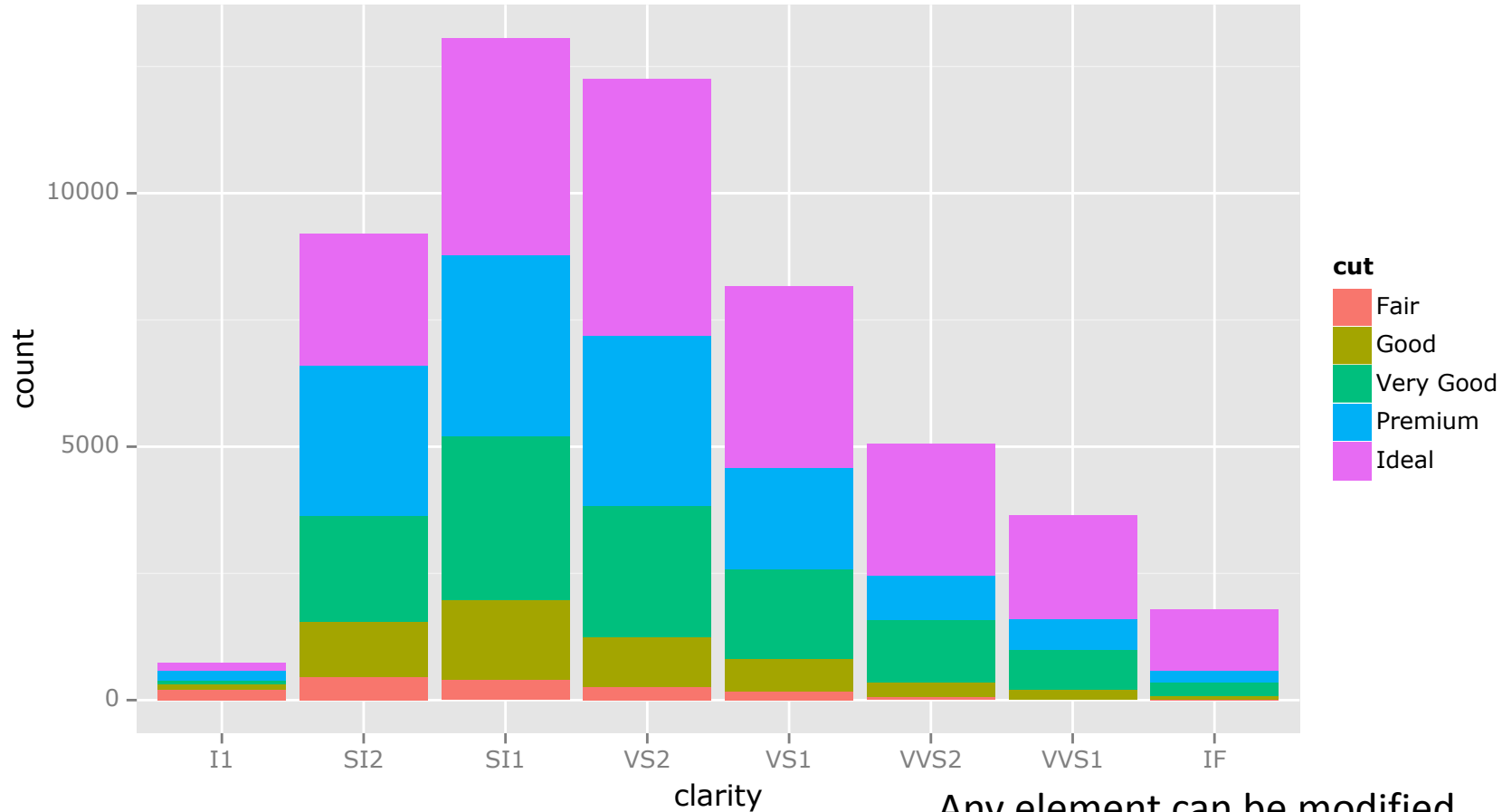
# EDITABLE VECTOR GRAPHICS



# 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](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*