Document and share

September 2020

Charlotte Wickham & Sara Altman

Adapted from *Tidy Tools* by Hadley Wickham

Welcome!

Building Tidy Tools

Charlotte Wickham and Sara Altman

```
# We'll get started at 8:35am

# Materials on GitHub: http://bit.ly/build-tt
# 0. Skim the README
# 1. Check you've completed
#    the Setup section
# 2. Get these slides from the
#    Schedule section
# 3. Run usethis::create_from_github("cwickham/ns",
fork = FALSE)
# Questions? Ask in Slido
```

Join at

slido.com

#80875

Passcode: **tidytools**

Outline for **today:** Workflow

8:30-10:00	Documentation/Sharing	Sara
10:00-10:30	Break	
10:30-12:00	Dependencies	Charlotte

3

Materials: http://bit.ly/build-tt

Getting Help

slido: Ask a question in the Q&A at anytime.
Also vote on other peoples' questions.

In Breakout Rooms:

1. Ask your roommates

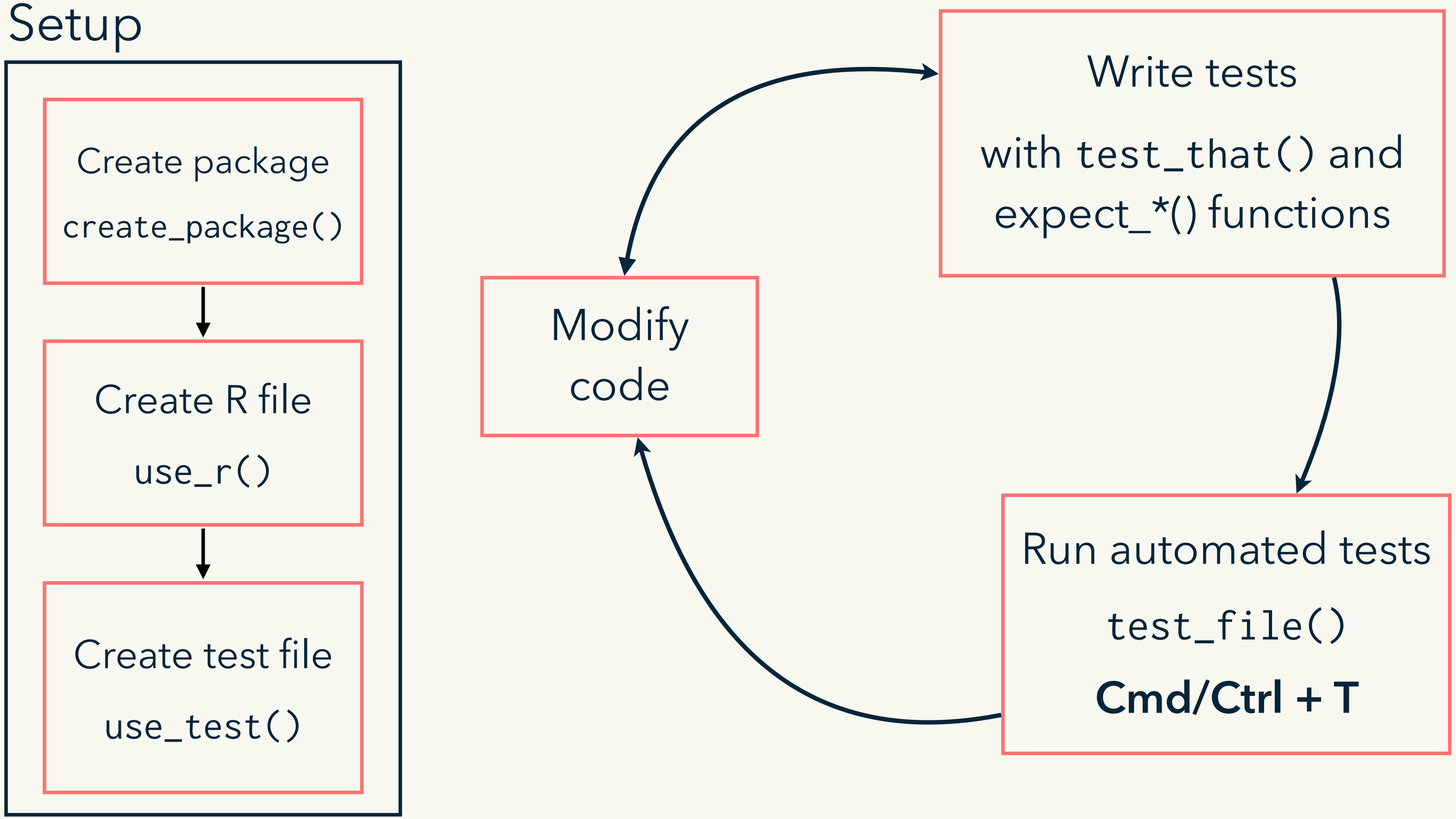
2. If your room is stuck, change your status to "Send Help" in Google Doc

Zoom chat: Reserved for urgent technical matters (e.g. "we can't hear you")

Overview

1. Review
2. Function docs
3. Other docs
4. R CMD check
5. Sharing your package

Review: workflow



Function docs with roxygen2

Function documentation

```
# View documentation for one function
?function

# All package docs, including all function docs
help(package = “mypackage”)
```

Create or edit R or test files

Description

This pair of functions makes it easy to create paired R and test files, using the convention that the tests for `R/foofy.R` should live in `tests/testhat/test-foofy.R`. You can use them to create new files from scratch by supplying `name`, or if you use RStudio, you can call to create (or navigate to) the paired file based on the currently open script.

Usage

```
use_r(name = NULL, open = rlang::is_interactive())

use_test(name = NULL, open = rlang::is_interactive())
```

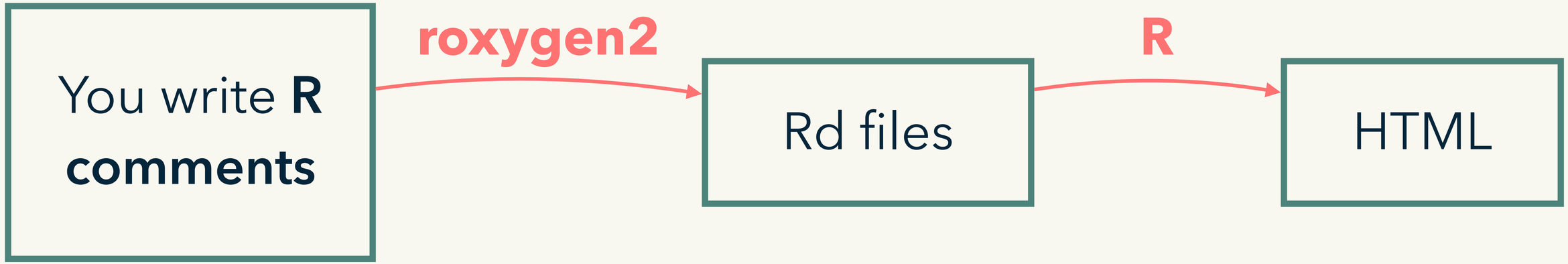
Arguments

`name`	Either a name without extension, or `NULL` to create the paired file based on currently open file in the script editor. If the R file is open, `use_test()` will create/open the corresponding test file; if the test file is open, `use_r()` will create/open the corresponding R file.
`open`	Whether to open the file for interactive editing.

See Also

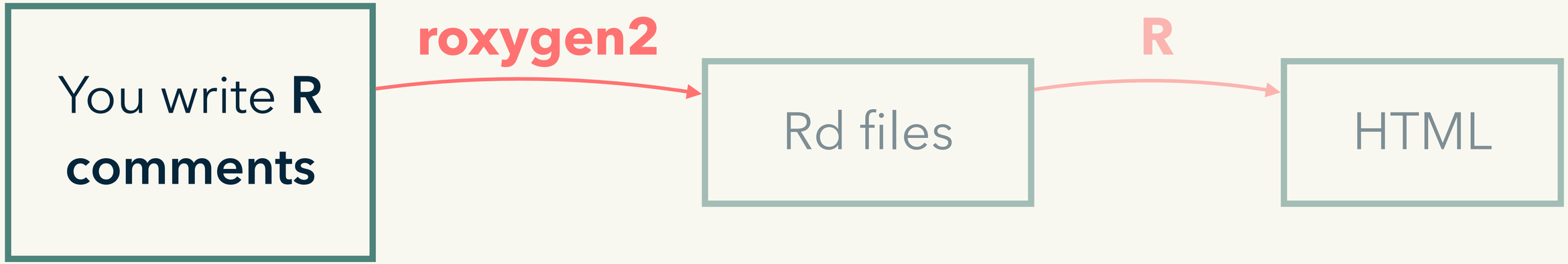
The testing and R code chapters of R Packages.

Roxygen2



http://r-pkgs.had.co.nz/man.html

Roxygen2



http://r-pkgs.had.co.nz/man.html

You write specially formatted comments in .R

In R/add_col.R

```r
#' Add a column to a data frame
#'
#' @description Add a column to a data frame in a specified position.
#'
#'
#' @param x A data frame.
#' @param name Name of the new column.
#' @param value Vector of new value(s).
#' @param where Position in existing data frame to insert new values.
#'
#' @return Data frame
#' @export
#'
#' @examples
#' df <- data.frame(a = 1:3)
#' add_col(df, name = "x", value = c("a", "b", "c"))
#' add_col(df, name = "x", value = c("a", "b", "c"), where = 2)
add_col <- function(x, name, value, where = ncol(x) + 1) {
  if (name %in% names(x)) {
    x[[name]] <- value
    x
  } else {
    y <- setNames(data.frame(value), name)
    insert_into(x, y, where)
  }
}
```

The comments go **above** the function definition

You write specially formatted comments in .R

Roxygen comment

Roxygen tag

In R/add_col.R

```r
#' Add a column to a data frame
#'
#' @description Add a column to a data frame in a specified position.
#'
#'
#' @param x
#' @param name Name of the new column.
#' @param value Vector of new value(s).
#' @param where Position in existing data frame to insert new values.
#'
#' @return Data frame
#' @export
#'
#' @examples
#' df <- data.frame(a = 1:3)
#' add_col(df, name = "x", value = c("a", "b", "c"))
#' add_col(df, name = "x", value = c("a", "b", "c"), where = 2)
add_col <- function(x, name, value, where = ncol(x) + 1) {
  if (name %in% names(x)) {
    x[[name]] <- value
    x
  } else {
    y <- setNames(data.frame(value), name)
    insert_into(x, y, where)
  }
}
```

Roxygen translates to .Rd

In man/add_col.Rd

```
% Generated by roxygen2: do not edit by hand
% Please edit documentation in R/add_col.R
\name{add_col}
\alias{add_col}
\title{Add a column to a data frame}
\usage{
add_col(x, name, value, where = ncol(x) + 1)
}
\arguments{
\item{x}{A data frame.}

\item{name}{Name of the new column.}

\item{value}{Vector of new value(s).}

\item{where}{Position in existing data frame to insert new values.}
}
\value{
Data frame
}
\description{
Add a column to a data frame in a specified position.
}
\examples{
df <- data.frame(a = 1:3)
add_col(df, name = "x", value = c("a", "b", "c"))
add_col(df, name = "x", value = c("a", "b", "c"), where = 2)
}
```

In almost all cases you can ignore these files

Add a column to a data frame

R translates to .html for viewing

Description

Add a column to a data frame in a specified position.

Usage

```
add_col(x, name, value, where = ncol(x) + 1)
```

Arguments

`x`	A data frame.
`name`	Name of the new column.
`value`	Vector of new value(s).
`where`	Position in existing data frame to insert new values.

Value

Data frame

Examples

```
df <- data.frame(a = 1:3)
add_col(df, name = "x", value = c("a", "b", "c"))
add_col(df, name = "x", value = c("a", "b", "c"), where = 2)
```

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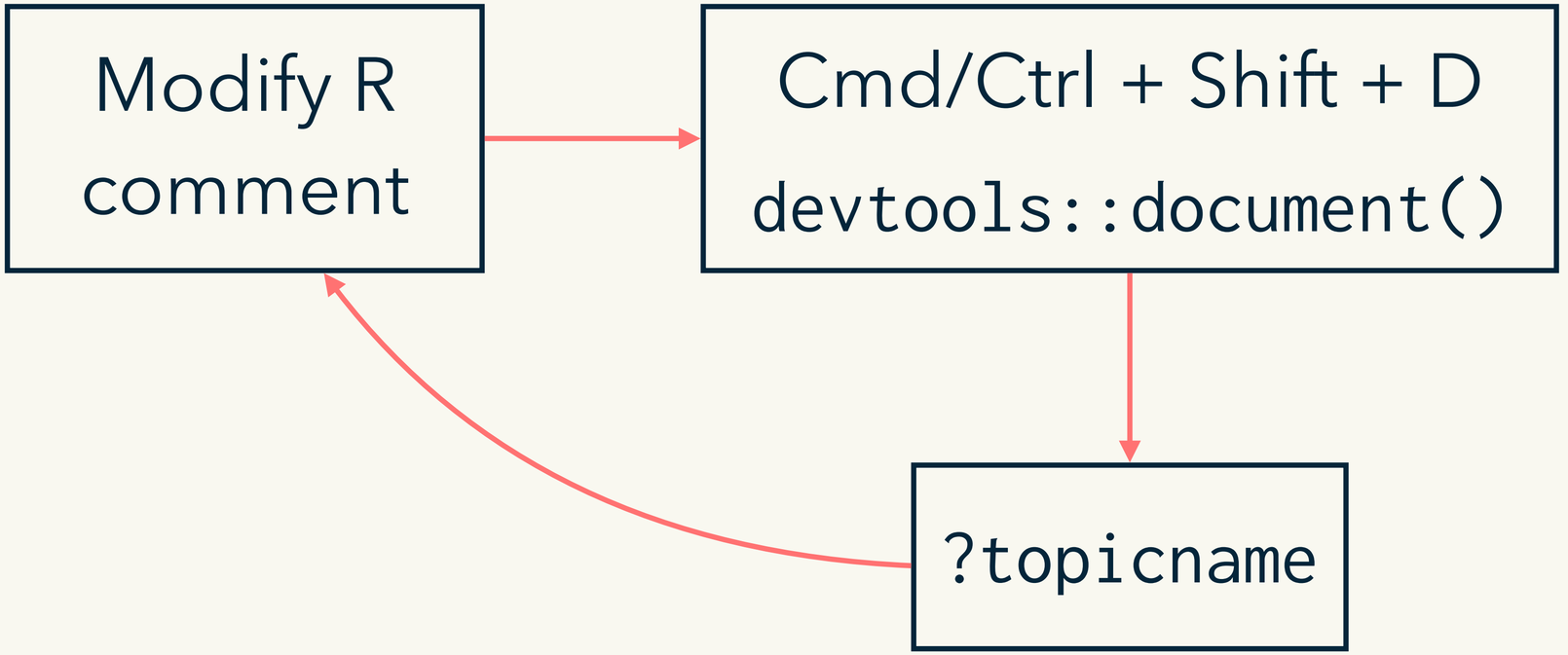
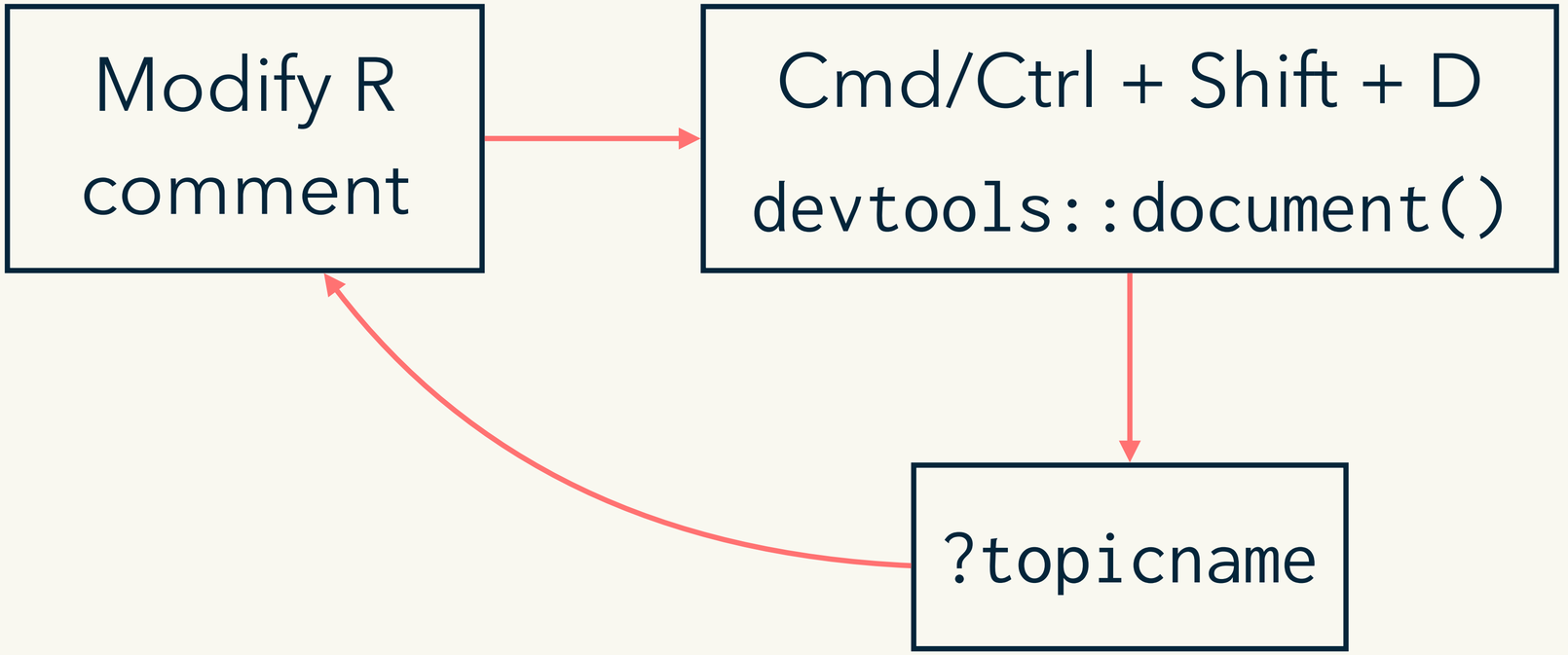
Passcode: **tidytools**

Documentation workflow



Updates .Rd files

Documentation workflow



Updates .Rd files

⚠ You must have loaded the package with `load_all()` at least once.

Change project to:

[fordogs]

create_from_github(“skaltman/fordogs", fork = FALSE, protocol = "https")

Your turn: Breakout rooms

Follow the steps on the **following slides** to:

1. Open/download fordogs.
2. Fix typos `fbind()`'s documentation.
3. Practice the workflow.
4. Let me know when you're done.

Goals:

1. Understand how to edit function documentation.
2. Understand the documentation workflow.

10 minutes

Slides: http://bit.ly/build-tt

Your turn: 1. Open fordogs 🐕🐕🐕🐕

If you already have fordogs:

Open it up in RStudio.

If you don't have fordogs:

Get the package:

```
usethis::create_from_github("skaltman/fordogs", fork = FALSE, protocol = "https")
```

OR: https://github.com/skaltman/fordogs

Clone or Download -> Download .zip.

Unzip, open fordogs.Rproj

Slides: http://bit.ly/build-tt

Your turn: 2. Fix the typos in the fbind() docs

Fix any typos you find, and fill in any missing information.

Your turn: 3. Practice the workflow

```
# Cmd/Ctrl + Shift + D
devtools::document()

# Preview documentation
?fbind
```

Your turn: 4. Ready to move on?

```
# Check in with your breakout room.
# Is everyone ready to move on?
# If not, help them out!
# If yes, edit your status in the Google Doc:
# bit.ly/build-tt-breakout

# While you wait:
# Go beyond fixing typos and continue editing the
# fbind() documentation for clarity and thoroughness.
```

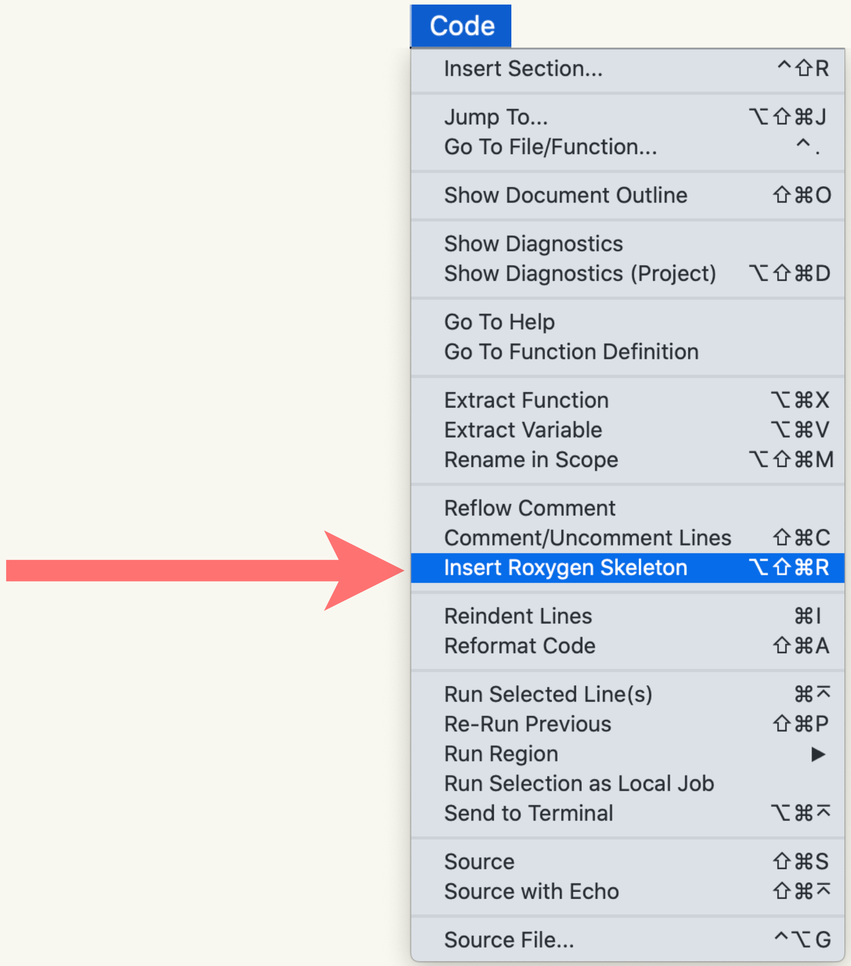
Questions?

✅ Editing function docs

✅ Updating function docs

Writing function docs

Add Roxygen outline



Cursor must be inside the function.

```
#' Title
#'
#' @param x
#' @param y
#' @param z
#'
#' @return
#' @export
#'
#' @examples
fun <- function(x, y, z) {

}
```

Can also make a snippet!

The description block

```
#' Title
#'
#' @param x
#' @param y
#' @param z
#'
#' @return
#' @export
#'
#' @examples
fun <- function(x, y, z) {

}
```

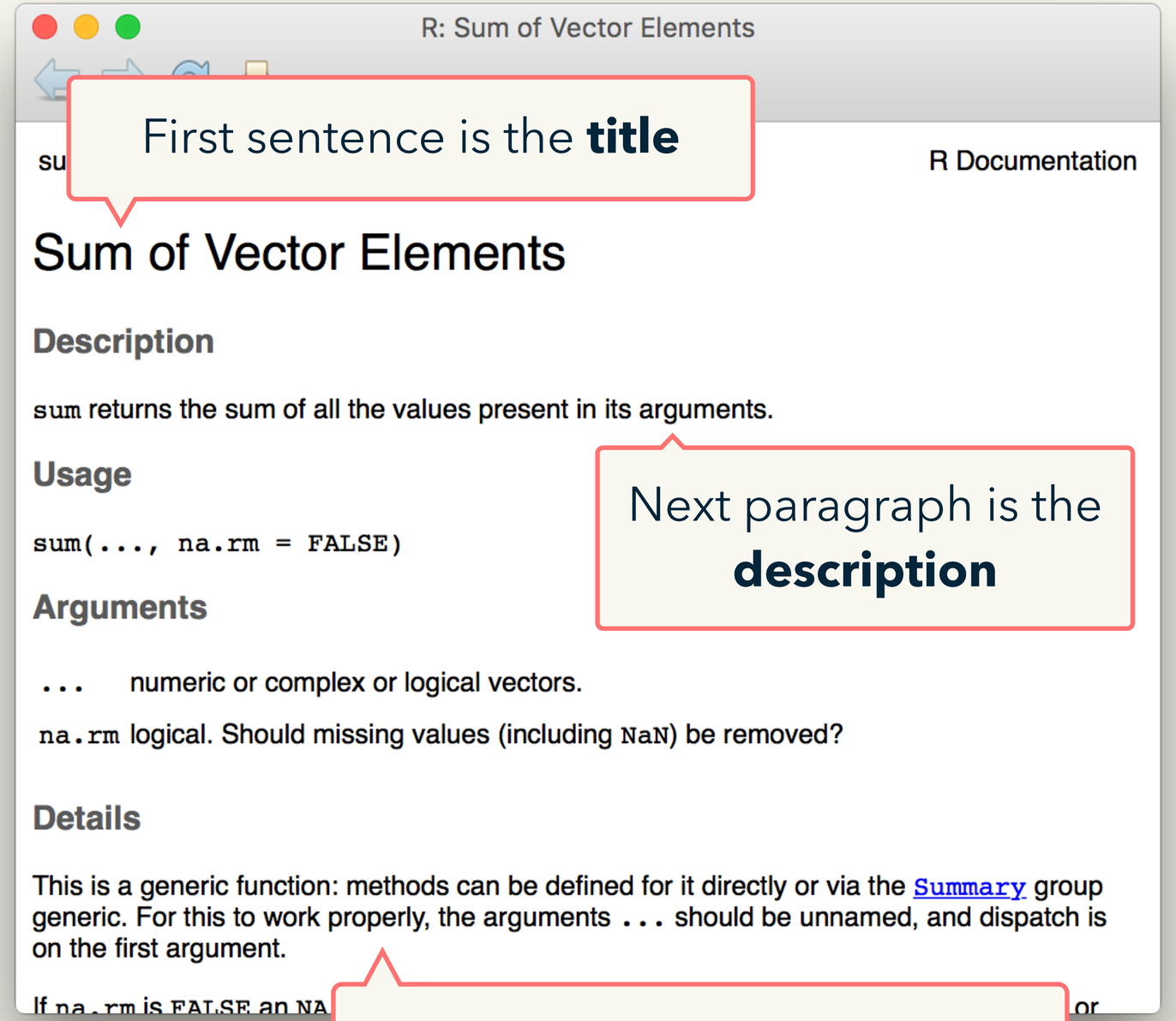
The description block

First sentence is the **title**

Next paragraph is the **description**

```
#' Sum of Vector Elements
#'
#' `sum` returns the sum of all the values present in its arguments.
#'
#' This is a generic function: methods can be defined for it directly
#' or via the [Summary] group generic. For this to work properly,
#' the arguments `...` should be unnamed, and dispatch is on the
#' first argument.
```

Everything else is the **details**


R: Sum of Vector Elements
First sentence is the **title**
su
R Documentation
Sum of Vector Elements
Description
sum returns the sum of all the values present in its arguments.
Usage
sum(..., na.rm = FALSE)
Next paragraph is the **description**
Arguments
... numeric or complex or logical vectors.
na.rm logical. Should missing values (including NaN) be removed?
Details
This is a generic function: methods can be defined for it directly or via the Summary group generic. For this to work properly, the arguments ... should be unnamed, and dispatch is on the first argument.
If na.rm is FALSE an NA
or
Everything else is the **details**

Tags

@param name Description.

@param name Description.

@param name Description.

@param x Data frame.

@param value Vector of new values.

* Type
* Describe what the argument does.
* Phrase ending in “.”

Tags

@return Description.

@return A data frame.

* Describe output from the function.
* Not always necessary.

Tags

```
@examples
example(1)
example(2)
```

* Simple examples of how to use your function.
* Should run without errors.

```
@examples
df <- data.frame(a = 1)
add_col(df, “b”, 2)
```

There are five tags you'll use for most functions

Tag	Purpose
`@param arg`	Describe inputs.
`@examples`	Show how the function works.
`@seealso`	Pointers to related functions.
`@return`	Describe outputs (value).
`@export`	Is this a user-visible function?

https://roxygen2.r-lib.org/articles/rd.html

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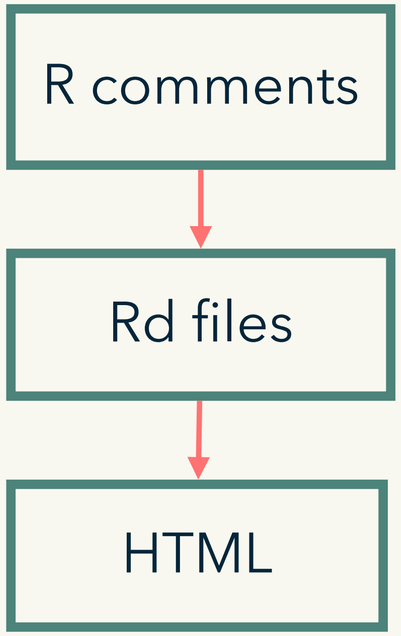
Passcode: **tidytools**

Easier



Harder

Writing text that other humans can understand.

Your turn: Breakout rooms

Follow the steps on the **following slides** to:

1. Complete the `fbind()` documentation.
2. Document `fdist()`.
3. Let me know when you're done.

12 minutes

Slides: http://bit.ly/build-tt

Your turn: 1. Complete fbind() documentation

Complete the documentation for `fbind()`.

A good minimum is to describe the types of the input and output.

Your turn: 2. Document fdist()

The function `fdist()` is written for you.

Document `fdist()`.

```
# Example calls to fdist():
fdist(factor(rpois(50, 5)))
fdist(factor(rpois(500, 5)))


fdist(ggplot2::diamonds$cut)
fdist(ggplot2::diamonds$cut, sort =
TRUE)
```

Your turn: 4. Ready to move on?

```
# Check in with your breakout room.
# Is everyone ready to move on?
# If not, help them out!
# If yes, edit your status in the Google Doc:
# bit.ly/built-td-breakout

# While you wait:
# Does fordogs include any tests? Try them out and
add your own.
```

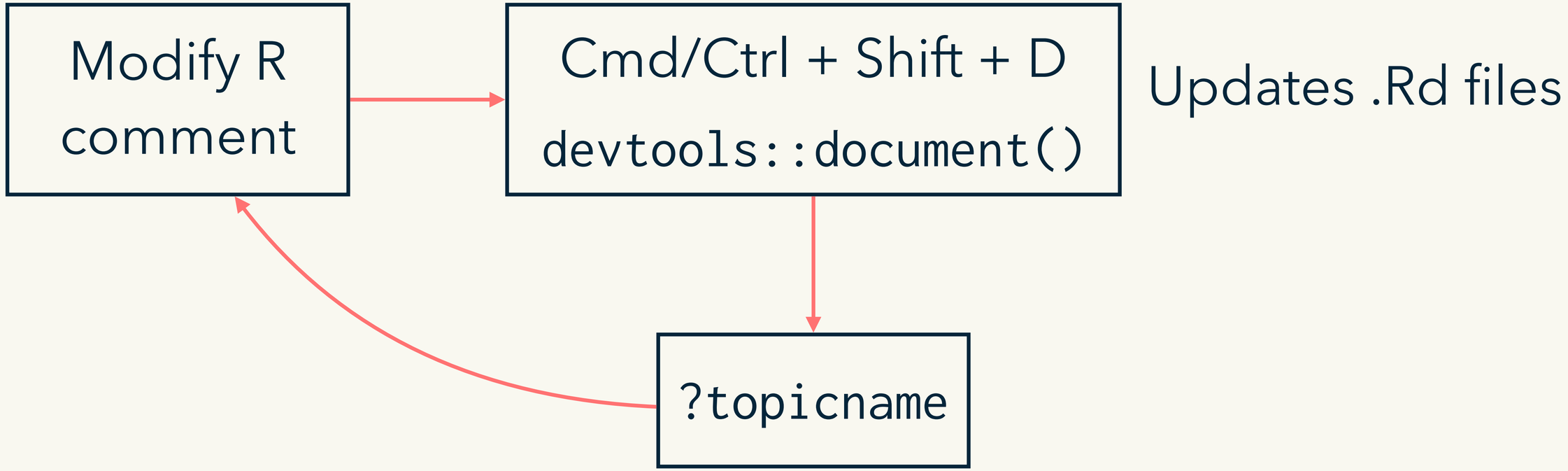
Questions?

Use markdown for formatting

```
# usethis::use_roxygen_md()

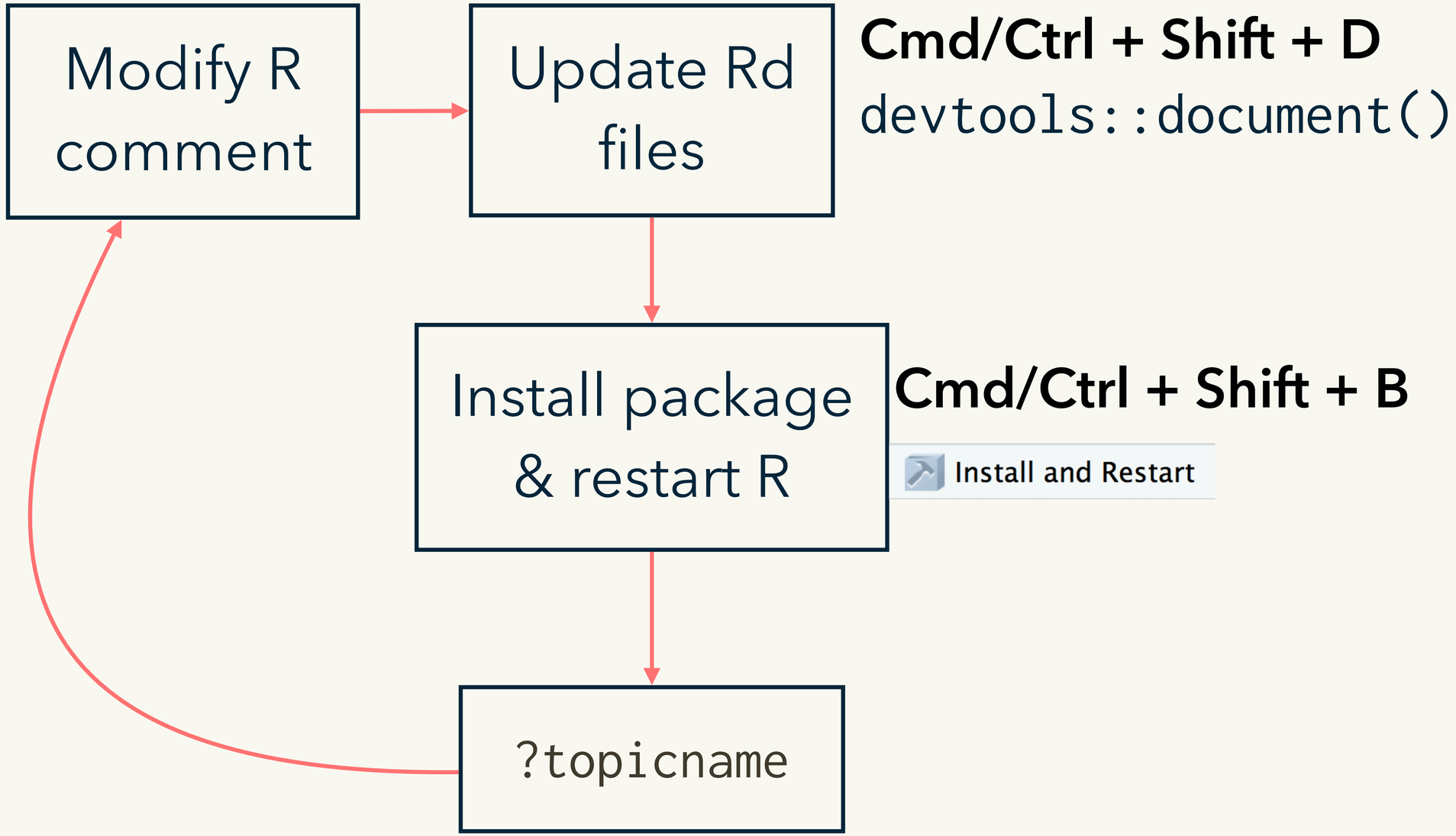
**bold**, _italic_, `code`

* [func()] # Link to function in same package
* [pkg::func()] # Link to function in another package
* [link text][func()] # Different display text
* [link text][pkg::func()]
```



⚠ Can't preview links.

Documentation workflow 2



slido

Join at

slido.com

#80875

Passcode: **tidytools**

Package documentation with rmarkdown

Use vignettes for broader topics

```
usethis::use_vignette("name")

# Adds to DESCRIPTION
Suggests: knitr
VignetteBuilder: knitr

# Creates vignettes/
# Drafts vignettes/name.Rmd
```

Use vignettes for broader topics

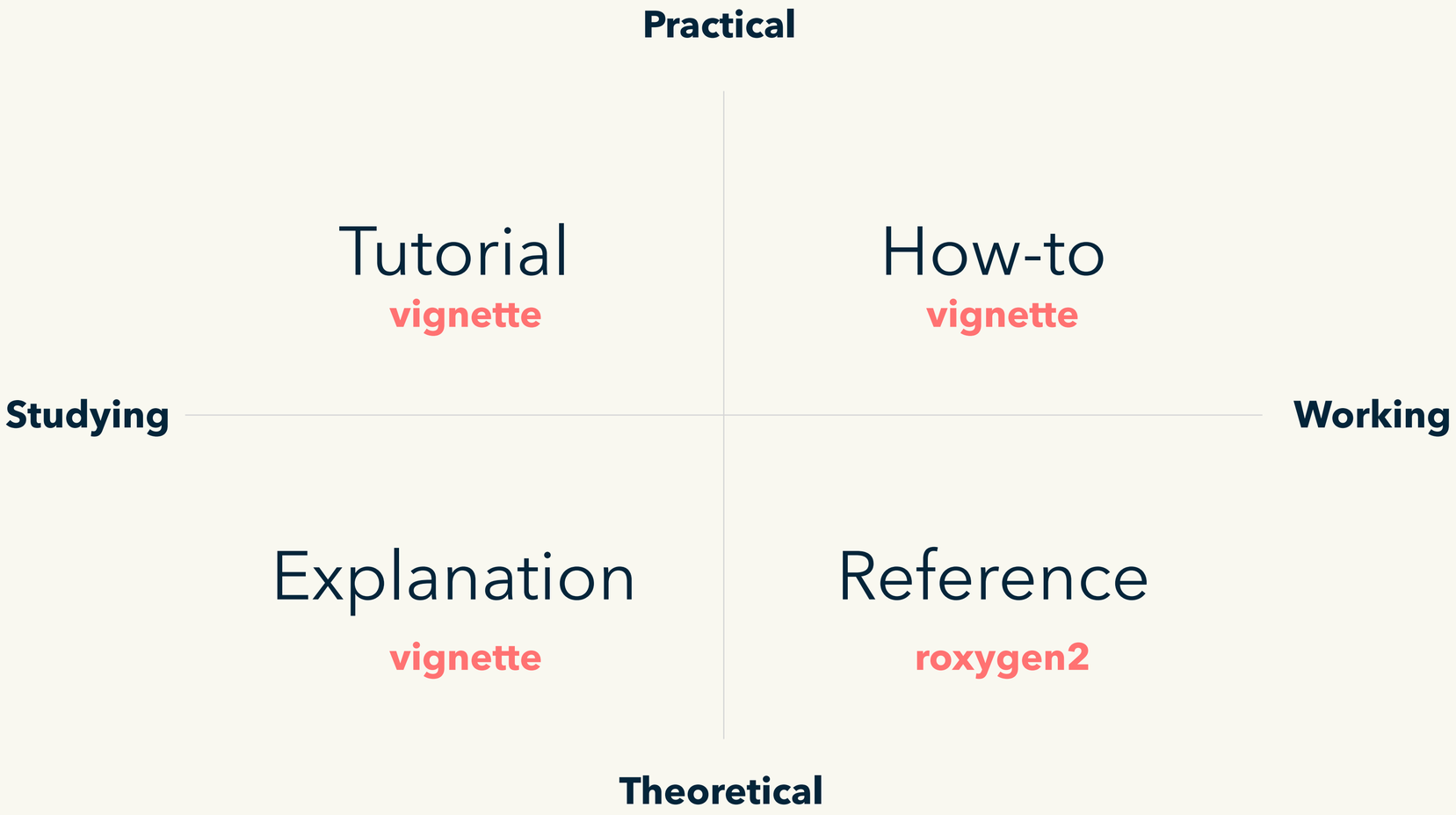
```
---
title: "Vignette title"
output: rmarkdown::html_vignette
vignette: >
  %\VignetteIndexEntry{test}
  %\VignetteEngine{knitr::rmarkdown}
  %\VignetteEncoding{UTF-8}
---

```{r, include = FALSE}
knitr::opts_chunk$set(
  collapse = TRUE,
  comment = "#>"
)
```

```{r setup}
library(fordogs)
```
```

Special output format

Special metadata needed by R



https://www.divio.com/blog/documentation/

Big picture in README

```
usethis::use_readme_rmd()

# * 2-3 paragraph overview
# * Installation instructions
# * Usage example, with pointer to vignettes
```

If evolving over time, note changes to API

```
usethis::use_news_md()

# * what's new
# * what's changed
# * what's gone away
#
# More info at
# http://style.tidyverse.org/news.html
```

Turn into a website with pkgdown

use_pkgdown()

R CMD check

R CMD check

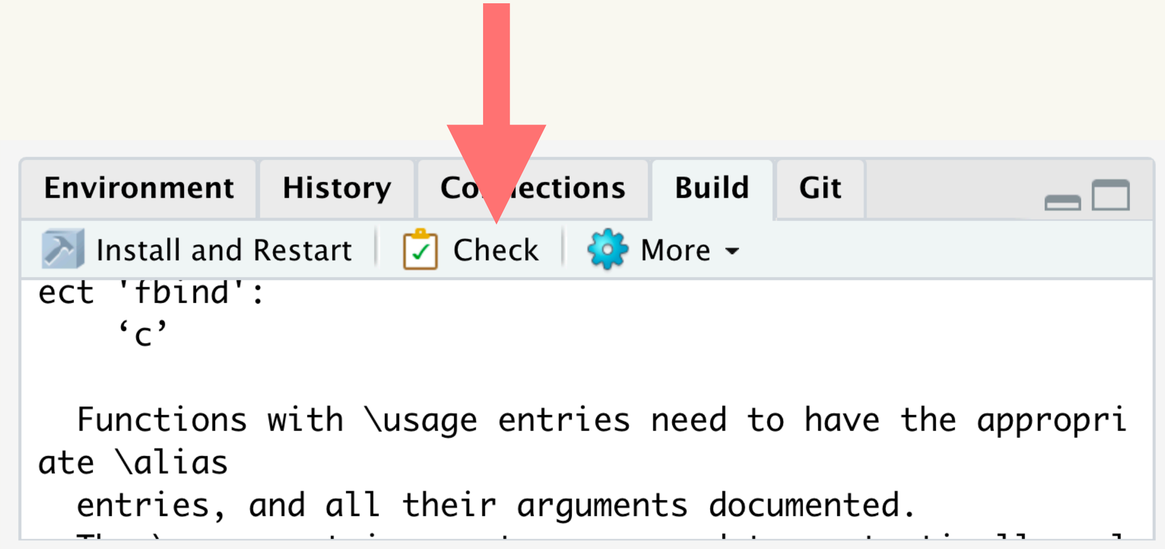
Runs automated checks for common problems in R packages.

http://r-pkgs.had.co.nz/check.html

R CMD check: 3 methods

```
# If you don't understand an error,
# google it!
devtools::check()
```

Shift + Cmd/Ctrl + E



R CMD check

Run early. 

Run often. 

“If it hurts,
do it more often”
— Martin Fowler

https://martinfowler.com/bliki/FrequencyReducesDifficulty.html

Types of problem

	Local	CRAN
ERROR	FIX	FIX
WARNING		FIX
NOTE		FIX

Your turn: Breakout rooms

Follow the steps on the **following slides** to:

1. Run R CMD check. Make sure it passes.
2. Add a vignette.
3. Activate markdown formatting and try it out.
4. Let me know when you're done.

10 min

Slides: http://bit.ly/build-tt

Your turn: 1. Run R CMD check

```
devtools::check()
# Or: Click “Check”
# Or: Cmd/Ctrl + Shift + E


# If it doesn’t pass (besides the timestamp note), fix the problems.
# If you don’t understand an error, try Googling it!
```

Your turn: 2. Add a vignette

```
# Add a vignette
usethis::use_vignette("name of your vignette”)
# Add one-two sentences.


# Can preview by install and restart-ing, then
# knitting
```

Your turn: 3. Activate markdown formatting

```
usethis::use_roxygen_md()


# Try it out! See Slide 35 for details.

# Remember: To render links, you have to
install + restart. Then ?function.
```

Your turn: 4. Ready to move on?

```
# Check in with your breakout room.
# Is everyone ready to move on?
# If not, help them out!
# If yes, edit your status in the Google Doc:
# bit.ly/build-tt-breakout

# While you wait:
# Add more information to your vignette.
```

Questions?

Sharing:
Git and GitHub

Create a repo for your package

```
# Sets up local Git repo for your project
usethis::use_git()
# Creates associated GitHub repo
usethis::use_github()
```

More info:

https://usethis.r-lib.org/articles/articles/usethis-setup.html

https://dcl-workflow.stanford.edu/project-setup.html#setup-github

Install from GitHub

```
# Once your package is on GitHub, others can
# install it with:
remotes::install_github("username/package_name")

# Or:
devtools::install_github("username/package_name")
```

Sharing: CRAN

Submitting to CRAN

More stringent requirements than just hosting on GitHub.

Must cleanly pass R CMD check.

See https://r-pkgs.org/release.html for (much) more info.

Summary

Setup

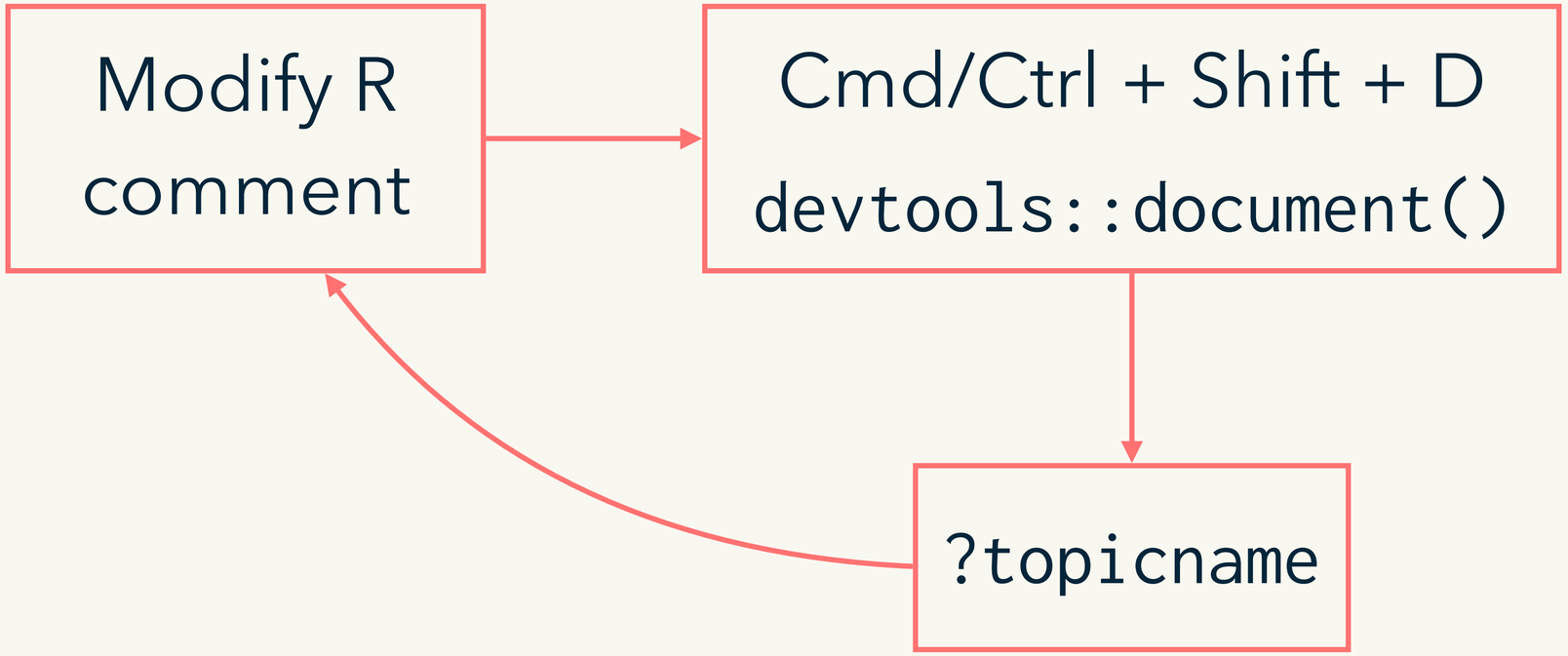
Add function docs:

Code > Insert Roxygen skeleton

Run early, run often

R CMD check

`devtools::check()`



Building Tidy Tools

Charlotte Wickham and Sara Altman

ON BREAK UNTIL 10:30am PDT

```
# We'll get started at 8:35am

# Materials on GitHub: http://bit.ly/build-tt
# 0. Skim the README
# 1. Check you've completed
#    the Setup section
# 2. Get these slides from the
#    Schedule section
# Questions? Ask in Slido
```