Introduction to Package Building

DEVELOPING R PACKAGES

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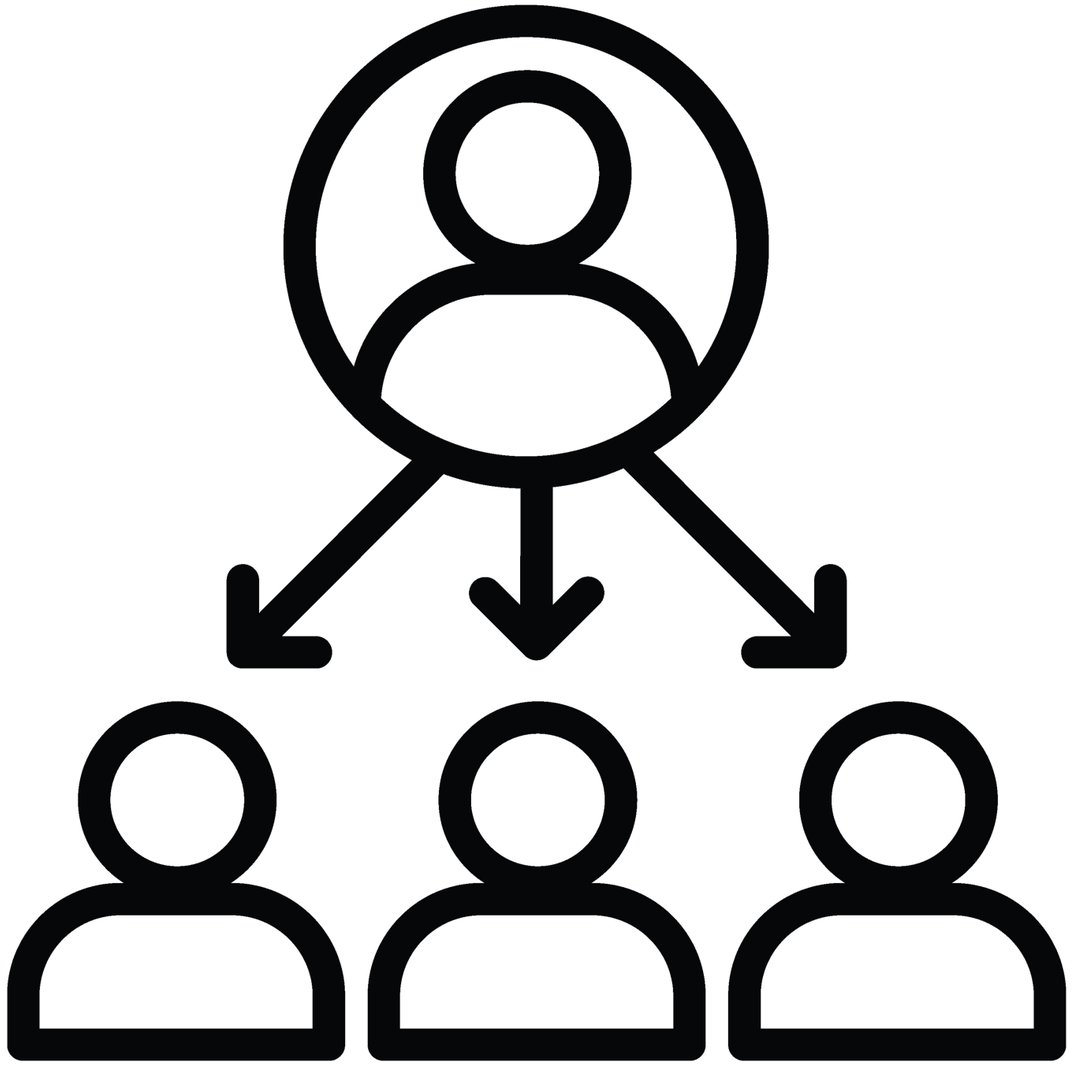

The structure of an R package

An R package can include:

- Functions
- Data
- Documentation
- Vignettes
- Tests

Mandatory components

As a minimum your package must include:

- R directory
- man directory
- NAMESPACE file
- DESCRIPTION file

Packages for easily creating packages!

- `devtools`
- `roxygen2`

Setting up an R Package

Core devtools functions:

- `create()`
- `document()`
- `check()`
- `build()`
- `test()`

create()

```
library(devtools)
create("simutils")
```

*Note: Avoid names already taken on **CRAN**.*

Let's practice!

DEVELOPING R PACKAGES

DESCRIPTION and NAMESPACE files

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DESCRIPTION file

- General package information
- Author and maintainer details
- Package dependencies
- License

Example DESCRIPTION file

```
Package: simutils
Title: Simulation Analysis Tools
Version: 1.0.0.0
Authors@R: c(
    person("Nic", "Crane", email = "ncrane@mango-solutions.com", role = c("aut", "cre")),
    person("Aimee", "Gott", email = "agott@mango-solutions.com", role = c("aut", "ctb")))
Description: A series of tools for simulation analysis used for learning about
    distributions.
Depends:
    R (>= 3.4.2)
License: GPL-2
LazyData: true
RoxygenNote: 6.0.1
Imports: dplyr,
    purrr
Suggests: testthat,
    knitr,
    rmarkdown
VignetteBuilder: knitr
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NAMESPACE file

The NAMESPACE file controls:

- Functions or packages imported for use by our package
- Functions exported by our package

We do NOT edit by hand!

Example NAMESPACE file

```
# Generated by roxygen2: do not edit by hand

export(na_counter)
export(sample_from_data)
import(dplyr)
import(purrr)
```

Let's practice!

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Optional directories

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Optional directories

We can also include:

- Data
- Vignettes
- Tests
- Compiled code
- Translations
- Demos

Data

```
sim_dat <- data.frame(
    ID = 1:10,
    Value = sample(1:11, 10),
    Apples = sample(c(TRUE, FALSE), 10, replace = TRUE)
)
```

```
use_data(sim_dat, pkg = "simutils")
```

Vignettes

```
use_vignette("my_first_vignette", pkg = "simutils")
```

Best practice for structuring code

Guidelines for the R directory:

- No subdirectories
- Don't have everything in one script
- Don't have a large number of small files
- Group similar functions together

Let's practice!

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