valtools : : **CHEAT SHEET**

Validation Framework

{valtools} implements a convention for organizing information referenced during validation of R packages to generate reports. This framework is consistent for all five (5) validation modes.

Validation Modes
separate from package
from source code
at installation
after installation
for distribution

```
- validation/
|   |- requirements/
|   |- test_cases/
|   |- test_code/
|   |- validation.yml
|   |- change_log.md
|
|- report.Rmd
```

Getting started

vt_create_package() Start an R package with validation enabled.
analogue to `usethis::create_package()`

vt_validation() Initiate just the validation framework. Use when adding to an existing package or validating separate from package.

USERNAMES

{valtools} tracks `Sys.getenv("USERNAME")` to quickly tag validation elements with extended details including names for authorship credit, title and role.

vt_add_users_to_config() Add additional username details to the configuration file.

vt_get_all_users() See a list of usernames already present

Validation Markdown Components

{valtools} populates each component file with some basic info in the header

```
#' @title Test_Case_002
#' @editor An Author
#' @editDate 2021-05-20
```

Filename
username
Current date
don't edit!! {roxygen2} tags

REQUIREMENTS

vt_use_req() initiates and opens a markdown file in the correct folder. Requirements may have additional header info regarding risk assessment.

```
#' @riskAssessment
#' 1.1:1, High Risk, High Impact
#' 1.2:2, Medium Risk, Medium Impact
```

{roxygen2} tag
Requirement identifier
Risk description

TEST CASES

vt_use_test_case() initiates and opens a markdown file in the correct folder. Test cases may have additional header info regarding coverage, which maps test cases to requirements. A single test case may span multiple requirements

```
#' @coverage
#' 2.1: 2.1
#' 2.2: 2.1, 2.2
```

{roxygen2} tag
Test case identifier
Requirement identifier(s)

Validation Test Code

vt_use_test_code() initiates and opens an R script in the correct folder. Each test is a call to testthat::test_that().

```
#' @editor A Different Author
#' @editDate 2021-05-20
test_that("T2.1", {
  test_data <- data.frame(number = 1:3,
                          color = c("red", "black", "blue"))

  testthat::expect_type(test_data$color, "character")
  testthat::expect_equal(test_data$number[1], 1)

})
```

{roxygen2} header tags provided for first test. Add manually for any subsequent tests
Test identifier
Each expectation result will be displayed individually in report

Report Code

vt_use_report(*template*) Initiate a report from one of the {valtools} templates. The report references content captured in markdown components and test code.

`template = "validation"`: Full validation report.
`template = "requirement_adoption"`: Only details needed for acceptance of requirements.

REPORT ELEMENTS

{valtools} include pointer functions to capture the environment, scraping {roxygen2} header information and maintaining flexibility across validation modes. Use these to customize a report.

vt_path() Path to the validation/ folder. Used in place of here::here().

vt_get_child_files() list of files in markdown component and test code

vt_file() – for a vector of markdown component and/or test code files, render as child document in the report. Used in place of setting {knitr} chunk option "*child*".

vt_scrape_* family of functions to scrape info into data.frames:

- **vt_scrape_sig_table() –** usernames and roles
- **vt_scrape_val_env()** – environment details
- **vt_scrape_change_log()** – changelog details
- **vt_scrape_risk_assessment()** - summarize all risk assessment tags in requirements files
- **vt_scrape_coverage_matrix()** – summarize all coverage tags in test case files
- **vt_scrape_function_editors()** - function editor info
- **vt_scrape_requirement_editors()** - requirement editor info
- **vt_scrape_test_case_editors()** – test case editor info
- **vt_scrape_test_code_editors()** - test code editor info

vt_kable_* - converts the output of a **vt_scrape_*** call in a kable object for embedding in report

Validation

Running validation compiles the report code to an eye-readable report suitable for sharing, including evaluation of test code and pointers in the current environment.

separate from package	from source code	at installation	after installation	for distribution
vt_validate_report() Uses only code that has already been installed to current workspace to render report.	**vt_validate_source()** Installs package code to temp location to render report. Does not alter current workspace.	**vt_validate_install()** Installs package to run report. Persistent update to workspace.	**vt_validate_installed_package()** Re-run validation report for package that was built/installed under {valtools} paradigm	**vt_validate_build()** Build a R package tarball bundle suitable for distribution via CRAN. Users will be able to re-validate after installation.

Development contributions by: