Package 'FSK2R'

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Type Package

Title An Interface Between the 'FSKX' Standard and 'R'

Version 0.1.3

Description Functions for importing, creating, editing and exporting 'FSK' files <https://foodrisklabs.bfr.bund.de/fskx-food-safety-knowledge-exchange-format/> using the 'R' programming environment. Furthermore, it enables users to run simulations contained in the 'FSK' files and visualize the results.

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Imports XML (>= 3.98), purrr (>= 0.2.4), dplyr (>= 0.7.8), tibble (>= 2.0.0), tidyr (>= 0.7.2), rlang (>= 0.3.0.1), readxl (>= 1.3.1), readtext (>= 0.7.1), zip (>= 2.0.4), xml2 (>= 1.2.0), rjson (>= 0.2.20), shiny (>= 1.3.2), tools (>= 3.5.3), utils (>= 3.5.3), R.utils (>= 2.9.0)

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VignetteBuilder knitr

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Contents

check_manifest_files *Checks that the files defined in the manifest exist*

Description

Checks that the files defined in the manifest exist

Usage

```
check_manifest_files(my_manifest, file_dir)
```

Arguments

my_manifest	A list with the contents of the manifest file.
file_dir	Path to the directory where all the files have been extracted.

convert_metadata_to_lists *Fix the metadat so that it is lists*

Description

Fix the metadat so that it is lists

Usage

```
convert_metadata_to_lists(my_metadata)
```

Arguments

my_metadata	A list with the information in the GoogleSheet as generated by metadata_list_to_fsk.

create_fsk *Creates an FSK model from an existing R script*

Description

The model includes the R model. If provided as arguments, it also includes the visualization script and the README. Besides, it generates a typical model_metadata, as well as a simulation (without parameters). The manifest is left empty.

Usage

```
create_fsk(
  r_model,
  r_visualization = NULL,
  readme = NULL,
  other_files = NULL,
  pckg_frame = NULL
)
```

Arguments

r_model	character with the path to the R script with the model.
r_visualization	(optional) character with the path to the R script with the visualization.
readme	(optional) path to README file.
other_files	(optional) character vector with the path to additional
pckg_frame	(optional) data.frame with 2 columns 'Package' files required by the model.

Value

An instance of FSK2R.

Examples

```
model_path <- system.file("extdata", "model.r", package = "FSK2R")
visualization_path <- system.file("extdata", "visualization.r", package = "FSK2R")
FSK_from_R <- create_fsk(model_path, visualization_path)
```

dataframe_to_list *Converts a dataframe to a list*

Description

This function is needed to convert the output format of rjson to the one used by FSK2R.

Usage

```
dataframe_to_list(this_frame)
```

Arguments

this_frame	data.frame to convert to a list.

export_fsk *Exports an object of FSK class as an .fskx file*

Description

Exports an object of FSK class as an .fskx file

Usage

```
export_fsk(fsk_object, out_path, check = TRUE)
```

Arguments

fsk_object	The instance of FSK2R to be exported.
out_path	Path where the file is to be saved.
check	Whether checks are made. TRUE by default.

Value

None

Examples

```
path_example <- system.file("extdata", "ToyModelv4.fskx", package = "FSK2R")
my_fsk <- import_fsk(path_example)
class(my_fsk)
export_fsk(my_fsk, out_path=file.path(tempdir(), "out.fskx"))
```

export_manifest *Functions for exporting the manifest of an FSK2R object*

Description

Functions for exporting the manifest of an FSK2R object

Usage

```
export_manifest(fsk_object, out_path, check = FALSE)
```

Arguments

fsk_object	The instance of FSK2R to be exported.
out_path	Path where the file is to be saved.
check	Whether checks are made. TRUE by default.

export_metadata *Function for exporting the metadata of an FSK2R object*

Description

Function for exporting the metadata of an FSK2R object

Usage

```
export_metadata(fsk_object, out_path, check = FALSE)
```

Arguments

fsk_object	The instance of FSK2R to be exported.
out_path	Path where the file is to be saved.
check	Whether checks are made. TRUE by default.

export_modelmetadata *Functions for exporting the model metadata of an FSK2R object*

Description

Functions for exporting the model metadata of an FSK2R object

Usage

```
export_modelmetadata(fsk_object, out_path, check = FALSE)
```

Arguments

fsk_object	The instance of FSK2R to be exported.
out_path	Path where the file is to be saved.
check	Whether checks are made. TRUE by default.

export_otherfiles *Export other files*

Description

Export other files

Usage

```
export_otherfiles(fsk_object, out_path, check = FALSE)
```

Arguments

fsk_object	The instance of FSK2R to be exported.
out_path	Path where the file is to be saved.
check	Whether checks are made. TRUE by default.

export_packages *Functions for exporting the packages of an FSK2R object*

Description

Functions for exporting the packages of an FSK2R object

Usage

```
export_packages(fsk_object, out_path, check = FALSE)
```

Arguments

fsk_object	The instance of FSK2R to be exported.
out_path	Path where the file is to be saved.
check	Whether checks are made. TRUE by default.

export_readme *Functions for exporting the README of an FSK2R object*

Description

Functions for exporting the README of an FSK2R object

Usage

```
export_readme(fsk_object, out_path, check = FALSE)
```

Arguments

fsk_object	The instance of FSK2R to be exported.
out_path	Path where the file is to be saved.
check	Whether checks are made. TRUE by default.

export_R_model *Functions for exporting the R model of an FSK2R object*

Description

Functions for exporting the R model of an FSK2R object

Usage

```
export_R_model(fsk_object, out_path, check = FALSE)
```

Arguments

fsk_object	The instance of FSK2R to be exported.
out_path	Path where the file is to be saved.
check	Whether checks are made. TRUE by default.

export_sbmlModel *Export the model.sbml*

Description

Export the model.sbml

Usage

```
export_sbmlModel(fsk_object, out_path, check = FALSE)
```

Arguments

fsk_object	The instance of FSK2R to be exported.
out_path	Path where the file is to be saved.
check	Whether checks are made. TRUE by default.

export_simulation *Export the sim.sedml*

Description

Export the sim.sedml

Usage

```
export_simulation(fsk_object, out_path, check = FALSE)
```

Arguments

fsk_object	The instance of FSK2R to be exported.
out_path	Path where the file is to be saved.
check	Whether checks are made. TRUE by default.

export_visualization *Functions for exporting the visualization script of an FSK2R object*

Description

Functions for exporting the visualization script of an FSK2R object

Usage

```
export_visualization(fsk_object, out_path, check = FALSE)
```

Arguments

fsk_object	The instance of FSK2R to be exported.
out_path	Path where the file is to be saved.
check	Whether checks are made. TRUE by default.

find_packages *Finds where packages are stored*

Description

Finds where packages are stored

Usage

```
find_packages(pckgs)
```

Arguments

pckgs	Character vector with packages names

Value

A list of packages locations. If one is not present, a character(0).

FSK_runner *Startup FSK runner*

Description

Starts FSK runner within RStudio.

Usage

```
FSK_runner()
```

Value

None

get_background *Returns the background of an FSK object*

Description

Returns the background of an FSK object

Usage

```
get_background(fsk_obj)
```

Arguments

fsk_obj	An object of class FSK2R

Value

A nested list with the following entries:

- studyTitle
- studyDescription

Examples

```
path_example <- system.file("extdata", "ToyModelv4.fskx", package = "FSK2R")
my_fsk <- import_fsk(path_example)
get_background(my_fsk)
```

get_general_info *Returns the general info of an FSK object*

Description

Returns the general info of an FSK object

Usage

```
get_general_info(fsk_obj)
```

Arguments

fsk_obj	An object of class FSK2R

Value

A nested list with the following entries:

- name
- source
- identifier
- creationDate
- rights
- language
- software
- creators
- reference

Examples

```
path_example <- system.file("extdata", "ToyModelv4.fskx", package = "FSK2R")
my_fsk <- import_fsk(path_example)
get_general_info(my_fsk)
```

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get_modelmath *Returns the model math of an FSK object*

Description

Returns the model math of an FSK object

Usage

```
get_modelmath(fsk_obj)
```

Arguments

fsk_obj	An object of class FSK2R

Value

A nested list with the following entries:

- parameter

Examples

```
path_example <- system.file("extdata", "ToyModelv4.fskx", package = "FSK2R")
my_fsk <- import_fsk(path_example)
get_modelmath(my_fsk)
```

get_readme *Readme of an FSK object*

Description

Readme of an FSK object

Usage

```
get_readme(fsk_obj)
```

Arguments

fsk_obj	An object of class FSK2R

Value

A character vector with the text in the README file.

Examples

```
path_example <- system.file("extdata", "ToyModelv4.fskx", package = "FSK2R")
my_fsk <- import_fsk(path_example)
get_readme(my_fsk)
```

get_scope *Returns the scope of an FSK object*

Description

Returns the scope of an FSK object

Usage

```
get_scope(fsk_obj)
```

Arguments

fsk_obj	An object of class FSK2R

Value

A nested list with the following entries:

- product
- hazard

Examples

```
path_example <- system.file("extdata", "ToyModelv4.fskx", package = "FSK2R")
my_fsk <- import_fsk(path_example)
get_scope(my_fsk)
```

`get_session_info` *Extract session information*

Description

Extract session information

Usage

```
get_session_info()
```

Value

A list with 3 elements: r_version, platform and pckgs. The latter is a data.frame with two columns: package and version.

`get_simulations` *Returns a summary of the simulations of an FSK object (NULL)*

Description

The function is not in-use. It is kept here for compatibility with older versions.

Usage

```
get_simulations(fsk_obj)
```

Arguments

`fsk_obj`	An object of class FSK2R

import_fsk *Import an FSK model into R*

Description

Importst the file in file_path and transforms it into a list of class FSK2R.

Usage

```
import_fsk(file_path, check = FALSE)
```

Arguments

file_path	Path where the file is located.
check	Whether checks are made. FALSE by default.

Value

An instance of FSK2R.

Examples

```
path_example <- system.file("extdata", "ToyModelv4.fskx", package = "FSK2R")
my_fsk <- import_fsk(path_example)
get_general_info(my_fsk)
```

import_fsk_join *Import of FSK with join node*

Description

Join nodes are not yet supported by FSK2R. It just gives an error message when called.

Usage

```
import_fsk_join(file_path, check = TRUE)
```

Arguments

file_path	Path where the file is located.
check	Whether checks are made. FALSE by default.

is.FSK2R *Is it an instance of FSK2R?*

Description

Is it an instance of FSK2R?

Usage

```
is.FSK2R(object)
```

Arguments

object	Object to check

Value

A logical vector

Examples

```
path_example <- system.file("extdata", "ToyModelv4.fskx", package = "FSK2R")
my_fsk <- import_fsk(path_example)
is.FSK2R(my_fsk)
```

is_fsk_with_r *Does the object have an R model?*

Description

Does the object have an R model?

Usage

```
is_fsk_with_r(fsk_obj)
```

Arguments

fsk_obj	An object of class FSK2R

Value

A logical vector.

Examples

```
path_example <- system.file("extdata", "ToyModelv4.fskx", package = "FSK2R")
my_fsk <- import_fsk(path_example)
is_fsk_with_r(my_fsk)
```

`map_FSK_metadata` *Map for the contents of the metadata*

Description

Maps the location (range) of different pieces of data within the Excel/Google Sheets template. It also includes the names of the sheets.

Usage

```
map_FSK_metadata(type_of_model = "generic", fsk_version = "1.04")
```

Arguments

`type_of_model`	Type of model, as defined in the FSK-ML documentation. By default, 'generic'.
`fsk_version`	Character stating the version of FSK-ML.

Value

A list with two components: the 'range' where each piece of information is stored and 'ws_name' with the name of the relevant sheet in the GoogleSheet template.

`map_metadata_xml_template`
Map between the names used in the template and the xml

Description

Returns a map of the names used within the sheets of the Excel/GoogleSheets template and the ones in metadata.json.

Usage

```
map_metadata_xml_template()
```

metadata_list_to_fsk *From read_fsk_metadata_XX to FSK2R format*

Description

Converts the contents of the Excel/Google Sheets template into a list with the format of the FSK2R object.

Usage

```
metadata_list_to_fsk(my_metadata, fsk_version = "1.0.5")
```

Arguments

my_metadata	A list generated by
fsk_version	Version of the FSK template.

n_simuls_fsk *Number of simulations in the FSK2R object*

Description

Number of simulations in the FSK2R object

Usage

```
n_simuls_fsk(fsk_obj)
```

Arguments

fsk_obj	An instance of FSK2R

Value

An integer vector of length one.

Examples

```
path_example <- system.file("extdata", "ToyModelv4.fskx", package = "FSK2R")
my_fsk <- import_fsk(path_example)
n_simuls_fsk(my_fsk)
```

read_fsk_json_metadata *Read the metadata.json file*

Description

Read the metadata.json file

Usage

```
read_fsk_json_metadata(file_dir, check = FALSE, filename = "metaData.json")
```

Arguments

file_dir	path to the file.
check	Whether to make checks. FALSE by default.
filename	Name of the file whith the information (meataData.json by default).

Value

A list with the contents of the metadata file.

read_fsk_manifest *Read the manifest of an FSK file and convert it to a data.frame*

Description

Read the manifest of an FSK file and convert it to a data.frame

Usage

```
read_fsk_manifest(file_dir, check = FALSE, filename = "manifest.xml")
```

Arguments

file_dir	path to the file.
check	Whether to make checks. FALSE by default.
filename	Name of the file whith the information (manifest.xml by default).

Value

A data.frame with the contents of the xlm file.

read_fsk_metadata_excel *FSK metadata from local Excel file*

Description

FSK metadata from local Excel file

Usage

```
read_fsk_metadata_excel(
  fsk_object,
  path,
  type_of_model = "generic",
  fsk_version = "1.0.5"
)
```

Arguments

fsk_object	FSK2R object where to save the data
path	character describing the path to the file
type_of_model	character identifying the type of model
fsk_version	Character describing the version of FSK-ML ("1.04" by default).

Value

A list with the information in the Excel file as generated by metadata_list_to_fsk.

read_fsk_model *Read the model.sbml*

Description

Read the model.sbml

Usage

```
read_fsk_model(file_dir, check = FALSE, filename = "model.sbml")
```

Arguments

file_dir	path to the file.
check	Whether to make checks. FALSE by default.
filename	Name of the file whith the information (model.sbml by default).

Value

A list with the contents of the .xml file.

`read_fsk_packages` *Read the packages.json*

Description

Read the packages.json

Usage

```
read_fsk_packages(file_dir, check = FALSE, filename = "packages.json")
```

Arguments

`file_dir`	path to the file.
`check`	Whether to make checks. FALSE by default.
`filename`	Name of the file whith the information (packages.json by default).

Value

A list with the contents of the JSON file.

`read_fsk_rdf_metadata` *Read the metadata.rdf*

Description

Read the metadata.rdf

Usage

```
read_fsk_rdf_metadata(file_dir, check = FALSE, filename = "metadata.rdf")
```

Arguments

`file_dir`	path to the file.
`check`	Whether to make checks. FALSE by default.
`filename`	Name of the file whith the information (metadata.rdf by default).

Value

A list with the contents of the .xml file.

read_fsk_readme *Read the README file*

Description

Read the README file

Usage

```
read_fsk_readme(file_dir, check = FALSE, filename = "README.txt")
```

Arguments

file_dir	path to the file.
check	Whether to make checks. FALSE by default.
filename	Name of the file whith the information (README.txt by default).

Value

A character string with the content of the README file.

read_fsk_sim *Read the sim.sedml file*

Description

Read the sim.sedml file

Usage

```
read_fsk_sim(file_dir, check = FALSE, filename = "sim.sedml")
```

Arguments

file_dir	path to the file.
check	Whether to make checks. FALSE by default.
filename	Name of the file whith the information (sim.sedml by default).

Value

A list with the content of the xml file.

read_other_files *Read "other files"*

Description

The R models may require further files that we can not predict. This functions just reads all the "unrecognized" files included in the manifest and copies them to the working directory.

Usage

```
read_other_files(my_tempdir, my_manifest, check = FALSE)
```

Arguments

my_tempdir	Temporary directory to extract contents of the zyp file.
my_manifest	A list with the information in the manifest file
check	Whether checks are made.

read_R_model *Reads the R model in an FSK model*

Description

Reads the R model in an FSK model

Usage

```
read_R_model(file_dir, check = FALSE, filename = "model.R")
```

Arguments

file_dir	path to the file.
check	Whether to make checks. FALSE by default.
filename	Name of the file (model.R by default).

Value

A character string with the contents of the R file.

read_visualization *Reads the visualization script in an FSK model*

Description

Reads the visualization script in an FSK model

Usage

```
read_visualization(file_dir, check = FALSE, filename = "visualization.R")
```

Arguments

file_dir	path to the file.
check	Whether to make checks. FALSE by default.
filename	Name of the file whith the information (visualization.R by default).

Value

A character string with the contents of the R file.

run_all_simulations *Run every simulation in an FSK object*

Description

Runs every simulation defined in the FSK object. This includes the ones originally included in the FSK container, as well as the ones added using set_new_simulation().

Usage

```
run_all_simulations(fsk_object, run_visualization = FALSE)
```

Arguments

fsk_object	Instance of FSK2R
run_visualization	Whether to call the visualization script. FALSE by default.

Value

None

run_simulation *Run one simulation in an FSK object*

Description

Runs the simulation corresponding to index. If defined, it also calls any visualization script.

Usage

```
run_simulation(fsk_object, index, run_visualization = FALSE)
```

Arguments

fsk_object	Instance of FSK2R
index	Index of the simulation
run_visualization	Whether to call the visualization script. FALSE by default.

Value

None

set_new_simulation *Define a new simulation in an FSK2R object*

Description

Sets a new simulation using the parameters defined in simulation_pars. The method updates all the relevant methods.

Usage

```
set_new_simulation(fsk_object, simulation_id, parameters)
```

Arguments

fsk_object	Instance of FSK2R
simulation_id	A character with an id for the new simulation.
parameters	A list whose names are the parameters to modify and their values their values for the simulation.

Value

An instance of FSK2R with the additional simulation data.

set_readme *Readme of an FSK object*

Description

Readme of an FSK object

Usage

```
set_readme(fsk_object, readme_text)
```

Arguments

fsk_object	An instance of FSK2R.
readme_text	A character vector of length 1 with the content of the README file.

Value

An instance of FSK2R.

Examples

```
path_example <- system.file("extdata", "ToyModelv4.fskx", package = "FSK2R")
my_fsk <- import_fsk(path_example)
set_readme(my_fsk, "This is the README.")
```

update_manifest *Updates the manifest file*

Description

Updates the manifest file

Usage

```
update_manifest(fsk_object)
```

Arguments

fsk_object	An instance of FSK2R.

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