Package 'FSK2R'

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Type Package

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

Version 0.2.0

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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Encoding UTF-8

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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.

`clean_empty_values` *Recursively clean object by removing empty values*

Description

Recursively clean object by removing empty values

Usage

```
clean_empty_values(obj)
```

Arguments

`obj`	Object to clean (any R object - list, vector, etc.)

Value

Cleaned object with empty values removed

`clean_json_string` *Clean empty values from JSON string*

Description

Clean empty values from JSON string

Usage

```
clean_json_string(json_string)
```

Arguments

`json_string`	JSON string to clean

Value

Cleaned JSON string with empty arrays and null values removed

`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 files required by the model.
pckg_frame	(optional) data.frame with 2 columns ‘Package‘ and ‘Version‘ with the packages used 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.

export_workspace *Functions for exporting the workspace of an FSK2R object*

Description

Exports simulation environment variables as workspace.r file and workspace.RData for easy loading in R sessions.

Usage

```
export_workspace(fsk_object, out_path, check = FALSE, simulation_env = NULL)
```

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.
simulation_env	Environment containing simulation results (optional)

extract_script_filenames_from_rdf *Extract script filenames from RDF metadata*

Description

This function parses the metadata.rdf to find the actual filenames for model scripts and visualization scripts, rather than assuming standard names.

Usage

```
extract_script_filenames_from_rdf(rdf_metadata)
```

Arguments

rdf_metadata	The parsed RDF metadata from read_fsk_rdf_metadata

Value

A list with modelScript and visualizationScript filenames

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).

FSKAuthor *Author Information*

Description

Author Information

Usage

```
FSKAuthor(
  title = NULL,
  familyName = NULL,
  givenName = NULL,
  email = NULL,
  telephone = NULL,
  streetAddress = NULL,
  country = NULL,
  zipCode = NULL,
  region = NULL,
  timeZone = NULL,
  gender = NULL,
  note = NULL,
  organization = NULL
)

FSKCreator(
  title = NULL,
```

```
  familyName = NULL,
  givenName = NULL,
  email = NULL,
  telephone = NULL,
  streetAddress = NULL,
  country = NULL,
  zipCode = NULL,
  region = NULL,
  timeZone = NULL,
  gender = NULL,
  note = NULL,
  organization = NULL
)
```

Arguments

title	Title (string)
familyName	Family name (string)
givenName	Given name (string)
email	Email address (string, required)
telephone	Telephone (string)
streetAddress	Street address (string)
country	Country (string)
zipCode	Zip code (string)
region	Region (string)
timeZone	Time zone (string)
gender	Gender (string)
note	Note (string)
organization	Organization (string)

FSKDataBackground *Data Background Section*

Description

Data Background Section

Usage

```
FSKDataBackground(
  study = NULL,
  studySample = NULL,
  dietaryAssessmentMethod = NULL,
  laboratory = NULL,
  assay = NULL
)
```

Arguments

study	FSKStudy object
studySample	List of FSKStudySample objects (array)
dietaryAssessmentMethod	List of FSKDietaryAssessmentMethod objects (array)
laboratory	List of FSKLaboratory objects (array)
assay	List of FSKAssay objects (array)

FSKGeneralInformation *General Information Section*

Description

General Information Section

Usage

```
FSKGeneralInformation(
  name = NULL,
  source = NULL,
  identifier = NULL,
  author = NULL,
  creator = NULL,
  creationDate = NULL,
  modificationDate = NULL,
  rights = NULL,
  availability = NULL,
  url = NULL,
  format = NULL,
  reference = NULL,
  language = NULL,
  software = NULL,
  languageWrittenIn = NULL,
  modelCategory = NULL,
  status = NULL,
  objective = NULL,
  description = NULL
)
```

Arguments

name	Model name (string)
source	Source of model/data (string)
identifier	Unique identifier (string)
author	List of FSKAuthor objects (array)

creator	List of FSKCreator objects (array)
creationDate	Creation date (string)
modificationDate	Modification dates (array of strings)
rights	Rights information (string)
availability	Availability (string)
url	URL (string)
format	Format (string)
reference	List of FSKReference objects (array)
language	Language (string)
software	Software (string)
languageWrittenIn	Language written in (string)
modelCategory	FSKModelCategory object
status	Status (string)
objective	Objective (string)
description	Description (string)

FSKMetadata *FSK Metadata Classes*

Description

S3 classes for FSK metadata based on the FSKX JSON schema specification. These classes ensure proper JSON serialization with correct array/scalar types.

Usage

```
FSKMetadata(
  modelType = "genericModel",
  generalInformation = NULL,
  scope = NULL,
  dataBackground = NULL,
  modelMath = NULL
)
```

Arguments

modelType	Model type, default "genericModel"
generalInformation	FSKGeneralInformation object
scope	FSKScope object
dataBackground	FSKDataBackground object
modelMath	FSKModelMath object

FSKModelCategory *Model Category Information*

Description

Model Category Information

Usage

```
FSKModelCategory(
  modelClass = NULL,
  modelSubClass = NULL,
  modelClassComment = NULL,
  basicProcess = NULL
)
```

Arguments

modelClass	Model class (string, required)
modelSubClass	Model subclass (array of strings)
modelClassComment	Model class comment (string)
basicProcess	Basic process (array of strings)

FSKModelMath *Model Math Section*

Description

Model Math Section

Usage

```
FSKModelMath(
  parameter = NULL,
  qualityMeasures = NULL,
  modelEquation = NULL,
  fittingProcedure = NULL,
  exposure = NULL,
  event = NULL
)
```

Arguments

parameter	List of FSKParameter objects (array)
qualityMeasures	List of FSKQualityMeasures objects (array)
modelEquation	List of FSKModelEquation objects (array)
fittingProcedure	Fitting procedure (string)
exposure	List of FSKExposure objects (array)
event	Event information (array of strings)

FSKParameter *Parameter Information*

Description

Parameter Information

Usage

```
FSKParameter(
  id = NULL,
  classification = NULL,
  name = NULL,
  description = NULL,
  unit = NULL,
  unitCategory = NULL,
  dataType = NULL,
  source = NULL,
  subject = NULL,
  distribution = NULL,
  value = NULL,
  reference = NULL,
  variabilitySubject = NULL,
  minValue = NULL,
  maxValue = NULL,
  error = NULL
)
```

Arguments

id	Parameter ID (string, required)
classification	Classification (string, required)
name	Parameter name (string, required)
description	Description (string)

unit	Unit (string, required)
unitCategory	Unit category (string)
dataType	Data type (string, required)
source	Source (string)
subject	Subject (string)
distribution	Distribution (string)
value	Value (string)
reference	FSKReference object
variabilitySubject	Variability subject (string)
minValue	Minimum value (string)
maxValue	Maximum value (string)
error	Error (string)

FSKReference *Reference Information*

Description

Reference Information

Usage

```
FSKReference(
  isReferenceDescription = NULL,
  title = NULL,
  doi = NULL,
  publicationType = NULL,
  date = NULL,
  pmid = NULL,
  authorList = NULL,
  abstract = NULL,
  journal = NULL,
  volume = NULL,
  issue = NULL,
  status = NULL,
  website = NULL,
  comment = NULL
)
```

Arguments

isReferenceDescription	Is reference description (boolean)
title	Title (string, required)
doi	DOI (string, required)
publicationType	Publication type (string)
date	Date (string)
pmid	PubMed ID (string)
authorList	Author list (string)
abstract	Abstract (string)
journal	Journal (string)
volume	Volume (string)
issue	Issue (string)
status	Status (string)
website	Website (string)
comment	Comment (string)

FSKScope *Scope Section*

Description

Scope Section

Usage

```
FSKScope(
  product = NULL,
  hazard = NULL,
  populationGroup = NULL,
  generalComment = NULL,
  temporalInformation = NULL,
  spatialInformation = NULL
)
```

Arguments

product	List of FSKProduct objects (array)
hazard	List of FSKHazard objects (array)
populationGroup	List of FSKPopulationGroup objects (array)

`generalComment` General comment (string)

`temporalInformation`
Temporal information (string)

`spatialInformation`
Spatial information (array of strings)

`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)
```

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*

Description

Returns a summary of the simulations of an FSK object

Usage

```
get_simulations(fsk_obj)
```

Arguments

fsk_obj	An object of class FSK2R

Value

A list of simulations, each with its parameters.

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, rdf_metadata = NULL)
```

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.
rdf_metadata	Optional list with RDF metadata used to determine script filenames and related metadata for ancillary files. Default NULL.

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,
  copy_workspace = FALSE,
  workspace_mode = "all",
  inject_to_global = FALSE
)
```

Arguments

`fsk_object`	Instance of FSK2R
`run_visualization`	Whether to call the visualization script. FALSE by default.
`copy_workspace`	Whether to copy the simulation workspace to the user's working directory. FALSE by default.
`workspace_mode`	What to copy when copy_workspace=TRUE. Options: "all" (copy everything), "generated" (copy only files created during simulation), "modified" (copy only files modified during simulation). Default is "all".
`inject_to_global`	Whether to inject simulation variables into the user's global environment for seamless model chaining. FALSE by default for backward compatibility.

Value

A named list with the results of all simulations

`run_simulation` *Run one simulation in an FSK object*

Description

Runs the simulation corresponding to index. If defined, it also calls any visualization script. Returns all user-created variables from the simulation environment, supporting various data types including scalars, vectors, data frames, lists, and matrices.

Usage

```
run_simulation(
  fsk_object,
  index,
  run_visualization = FALSE,
  copy_workspace = FALSE,
  workspace_mode = "all",
  inject_to_global = FALSE
)
```

Arguments

`fsk_object`	Instance of FSK2R
`index`	Index of the simulation
`run_visualization`	Whether to call the visualization script. FALSE by default.
`copy_workspace`	Whether to copy the simulation workspace to the user's working directory. FALSE by default.

`workspace_mode` What to copy when copy_workspace=TRUE. Options: "all" (copy everything), "generated" (copy only files created during simulation), "modified" (copy only files modified during simulation). Default is "all".

`inject_to_global`
Whether to inject simulation variables into the user's global environment for seamless model chaining. FALSE by default for backward compatibility.

Value

A named list containing all variables created by the simulation model. Each element preserves the original data type (numbers, strings, data frames, lists, matrices, etc.). Returns an empty list if no variables are created. When inject_to_global=TRUE, variables are also available in the global environment.

`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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