

Package ‘rDataPipeline’

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Title Functions to Interact with the 'FAIR Data Pipeline'

Version 0.60.0

Description R implementation of the 'FAIR Data Pipeline API'. The 'FAIR Data Pipeline' is intended to enable tracking of provenance of FAIR (findable, accessible and interoperable) data used in epidemiological modelling.

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Imports assertthat, cli, configr, dplyr, git2r, httr, jsonlite, openssl, R6, rhdf5, semver, stats, usethis, utils, yaml

Suggests units, testthat

biocViews rhdf5

Encoding UTF-8

RoxygenNote 7.3.2

URL <https://www.fairdatapipeline.org/rDataPipeline/>,
<https://github.com/FAIRDataPipeline/rDataPipeline>

BugReports <https://github.com/FAIRDataPipeline/rDataPipeline/issues>

NeedsCompilation no

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rDataPipeline-package *rDataPipeline*

Description

FAIR Data Pipeline API

Details

For more information see <https://www.fairdatapipeline.org/>

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See Also

Useful links:

- <https://www.fairdatapipeline.org/rDataPipeline/>
- <https://github.com/FAIRDataPipeline/rDataPipeline>
- Report bugs at <https://github.com/FAIRDataPipeline/rDataPipeline/issues>

add_read

add_read

Description

Add data product to read block of user-written config file. Used in combination with `create_config()` for unit testing.

Usage

```
add_read(  
  path,  
  data_product,  
  component,  
  version,  
  use_data_product,  
  use_component,  
  use_version,  
  use_namespace  
)
```

Arguments

path	config file path
data_product	data_product field
component	component field
version	(optional) version field
use_data_product	(optional) use_data_product field
use_component	(optional) use_component field
use_version	(optional) use_version field
use_namespace	(optional) use_namespace field

Examples

```
## Not run:
path <- "test_config/config.yaml"

# Write run_metadata block
create_config(path = path,
              description = "test",
              input_namespace = "test_user",
              output_namespace = "test_user")

# Write read block
add_read(path = path,
         data_product = "test/array",
         component = "level/a/s/d/f/s",
         version = "0.2.0")

## End(Not run)
```

add_write

add_write

Description

Add data product to read block of user-written config file. Used in combination with `create_config()` for unit testing.

Usage

```
add_write(
  path,
  data_product,
  description,
  version,
  file_type,
  use_data_product,
  use_component,
  use_version,
  use_namespace
)
```

Arguments

path	config file path
data_product	data_product field
description	component field
version	(optional) version field

file_type (optional) file type field
 use_data_product (optional) use_data_product field
 use_component (optional) use_component field
 use_version (optional) use_version field
 use_namespace (optional) use_namespace field

Examples

```
## Not run:
path <- "test_config/config.yaml"

# Write run_metadata block
create_config(path = path,
              description = "test",
              input_namespace = "test_user",
              output_namespace = "test_user")

# Write read block
add_write(path = path,
          data_product = "test/array",
          description = "data product description",
          version = "0.2.0")

## End(Not run)
```

create_config

create_config

Description

Generates (user generated) config.yaml files for unit tests. Use add_read() and add_write() functions to add read and write blocks.

Usage

```
create_config(
  path,
  description,
  input_namespace,
  output_namespace,
  write_data_store = file.path(tempdir(), "datastore", ""),
  force = TRUE,
  local_repo = "local_repo"
)
```

Arguments

path	config file path
description	description field
input_namespace	input_namespace field
output_namespace	output_namespace field
write_data_store	write_data_store field
force	force
local_repo	local_repo

fair_init	<i>fair_init</i>
-----------	------------------

Description

fair_init

Usage

```
fair_init(name, identifier, endpoint = "http://127.0.0.1:8000/api/")
```

Arguments

name	a string specifying the full name or organisation name of the author; note that at least one of name or identifier must be specified
identifier	(optional) a string specifying the full URL identifier (<i>e.g.</i> ORCID or ROR ID) of the author
endpoint	a string specifying the registry endpoint

fair_run	<i>fair_run</i>
----------	-----------------

Description

fair_run

Usage

```
fair_run(
  path = "config.yaml",
  endpoint = "http://127.0.0.1:8000/api/",
  skip = FALSE
)
```

Arguments

path	string
endpoint	a string specifying the registry endpoint
skip	don't bother checking whether the repo is clean

fdp-class

*fdp-class***Description**

fdp-class

fdp-class

Details

Container for class fdp

Public fields

yaml a list containing the contents of the working config.yaml

fdp_config_dir a string specifying the directory passed from fair run

model_config a string specifying the URL of an entry in the object table associated with the storage_location of the working config.yaml

submission_script a string specifying the URL of an entry in the object table associated with the storage_location of the submission script

code_repo a string specifying the URL of an entry in the object table associated with the GitHub repository

code_run a string specifying the URL of an entry in the code_run table

inputs a data.frame containing metadata associated with code_run inputs

outputs a data.frame containing metadata associated with code_run outputs

issues a data.frame containing metadata associated with code_run issues

Methods**Public methods:**

- `fdp$new()`
- `fdp$print()`
- `fdp$input()`
- `fdp$output()`
- `fdp$output_index()`
- `fdp$raise_issue()`
- `fdp$finalise_output_hash()`

- `fdp$finalise_output_url()`
- `fdp$clone()`

Method `new()`: Create a new fdp object

Usage:

```
fdp$new(
  yaml,
  fdp_config_dir,
  model_config,
  submission_script,
  code_repo,
  code_run
)
```

Arguments:

`yaml` a list containing the contents of the working `config.yaml`

`fdp_config_dir` a string specifying the directory passed from `fair run`

`model_config` a string specifying the URL of an entry in the object table associated with the `storage_location` of the working `config.yaml`

`submission_script` a string specifying the URL of an entry in the object table associated with the `storage_location` of the submission script

`code_repo` a string specifying the URL of an entry in the object table associated with the GitHub repository

`code_run` a string specifying the URL of an entry in the `code_run` table

Returns: Returns a new fdp object

Method `print()`: Print method

Usage:

```
fdp$print(...)
```

Arguments:

`...` additional parameters, currently none are used

Method `input()`: Record `code_run` inputs in fdp object

Usage:

```
fdp$input(
  data_product,
  use_data_product,
  use_component,
  use_version,
  use_namespace,
  path,
  component_url
)
```

Arguments:

`data_product` a string specifying the name of the data product, used as a reference

use_data_product a string specifying the name of the data product, used as input in the code_run
 use_component a string specifying the name of the data product component, used as input in the code_run
 use_version a string specifying the data product version, used as input in the code_run
 use_namespace a string specifying the namespace in which the data product resides, used as input in the code_run
 path a string specifying the location of the data product in the local data store
 component_url a string specifying the URL of an entry in the object_component table

Returns: Returns an updated fdp object

Method output(): Record code_run outputs in fdp object

Usage:

```
fdp$output(
  data_product,
  use_data_product,
  use_component,
  use_version,
  use_namespace,
  path,
  data_product_description,
  component_description,
  public
)
```

Arguments:

data_product a string specifying the name of the data product, used as a reference
 use_data_product a string specifying the name of the data product, used as output in the code_run
 use_component a string specifying the name of the data product component, used as output in the code_run
 use_version a string specifying the version of the data product, used as output in the code_run
 use_namespace a string specifying the namespace in which the data product resides, used as output in the code_run
 path a string specifying the location of the data product in the local data store
 data_product_description a string containing a description of the data product
 component_description a string containing a description of the data product component
 public

Returns: Returns an updated fdp object

Method output_index(): Return index of data product recorded in fdp object so that an issue may be attached

Usage:

```
fdp$output_index(data_product, component, version, namespace)
```

Arguments:

data_product a string specifying the name of the data product, used as output in the code_run
 component a string specifying the name of the data product component, used as output in the code_run
 version a string specifying the name of the data product version, used as output in the code_run
 namespace a string specifying the namespace in which the data product resides, used as input in the code_run

Returns: Returns an index used to identify the data product

Method raise_issue(): Record issue in fdp object

Usage:

```
fdp$raise_issue(
  index,
  type,
  use_data_product,
  use_component,
  use_version,
  use_namespace,
  issue,
  severity
)
```

Arguments:

index a numeric index, used to identify each input and output in the fdp object
 type a string specifying the type of issue (one of "data", "config", "script", "repo")
 use_data_product a string specifying the name of the data product, used as output in the code_run
 use_component a string specifying the name of the data product component, used as output in the code_run
 use_version a string specifying the name of the data product version, used as output in the code_run
 use_namespace a string specifying the namespace in which the data product resides, used as input in the code_run
 issue a string containing a free text description of the issue
 severity an integer specifying the severity of the issue

Returns: Returns an updated fdp object

Method finalise_output_hash(): Record file hash and update path name in fdp object

Usage:

```
fdp$finalise_output_hash(
  use_data_product,
  use_data_product_runid,
  use_version,
  use_namespace,
  hash,
  new_path,
```

```

        data_product_url,
        delete_if_duplicate = FALSE
    )

```

Arguments:

`use_data_product` a string specifying the name of the data product, used as output in the `code_run`

`use_data_product_runid` a string specifying the name of the data product, the same as `use_data_product` excluding the `RUN_ID` variable

`use_version` a string specifying the name of the data product version, used as output in the `code_run`

`use_namespace` a string specifying the namespace in which the data product resides, used as input in the `code_run`

`hash` a string specifying the hash of the file

`new_path` a string specifying the updated location (filename is now the hash of the file) of the data product in the local data store

`data_product_url` a string specifying the URL of an object associated with the data_product

`delete_if_duplicate` (optional) default is FALSE

Returns: Returns an updated fdp object

Method `finalise_output_url()`: Record data_product and component URLs in fdp object

Usage:

```

fdp$finalise_output_url(
    use_data_product,
    use_component,
    use_version,
    use_namespace,
    component_url
)

```

Arguments:

`use_data_product` a string specifying the name of the data product, used as output in the `code_run`

`use_component` a string specifying the name of the data product component, used as output in the `code_run`

`use_version` a string specifying the name of the data product version, used as output in the `code_run`

`use_namespace` a string specifying the namespace in which the data product resides, used as input in the `code_run`

`component_url` a string specifying the URL of an entry in the `object_component` table

Returns: Returns an updated fdp object

Method `clone()`: The objects of this class are cloneable with this method.

Usage:

```
fdp$clone(deep = FALSE)
```

Arguments:

`deep` Whether to make a deep clone.

finalise	<i>Finalise code run</i>
----------	--------------------------

Description

Finalise Code Run and push associated metadata to the local registry.

Usage

```
finalise(handle, delete_if_empty = FALSE, delete_if_duplicate = FALSE)
```

Arguments

- handle an object of class fdp, R6 containing metadata required by the Data Pipeline API
- delete_if_empty (optional) default is FALSE; see Details
- delete_if_duplicate (optional) default is FALSE; see Details

Details

If a Code Run does not read an input, write an output, or attach an issue, then delete the Code Run entry when delete_if_empty is set to TRUE.

If a data product has the same hash as a previous version, remove it from the registry when delete_if_duplicate is set to TRUE.

findme	<i>findme</i>
--------	---------------

Description

Returns metadata associated with the calculated hash of a target file. When multiple entries exist in the data registry all are returned.

Usage

```
findme(file, endpoint)
```

Arguments

- file file path
- endpoint endpoint

find_read_match	<i>Find matching read aliases in config file</i>
-----------------	--

Description

Find read aliases in working config that match wildcard string

Usage

```
find_read_match(handle, data_product)
```

Arguments

handle	an object of class fdp, R6 containing metadata required by the Data Pipeline API
data_product	a string specifying the data product name

find_write_match	<i>Find matching write aliases in config file</i>
------------------	---

Description

Find write aliases in working config that match wildcard string

Usage

```
find_write_match(handle, data_product)
```

Arguments

handle	an object of class fdp, R6 containing metadata required by the Data Pipeline API
data_product	a string specifying the data product name

get_components	<i>Get H5 file components</i>
----------------	-------------------------------

Description

Returns the names of the items at the root of the file

Usage

```
get_components(filename)
```

Arguments

filename	a string specifying a filename
----------	--------------------------------

Value

Returns the names of the items at the root of the file

See Also

Other get functions: [get_entry\(\)](#), [get_existing\(\)](#), [get_file_hash\(\)](#), [get_github_hash\(\)](#)

get_dataproduct	<i>get_dataproduct</i>
-----------------	------------------------

Description

get_dataproduct

Usage

```
get_dataproduct(  
  data_product,  
  version,  
  namespace,  
  endpoint = "http://127.0.0.1:8000/api/"  
)
```

Arguments

data_product	data_product
version	version
namespace	namespace
endpoint	endpoint

get_entry	<i>Return all fields associated with a table entry in the data registry</i>
-----------	---

Description

Return all fields associated with a table entry in the data registry

Usage

```
get_entry(table, query, endpoint = "http://127.0.0.1:8000/api/")
```

Arguments

table	a string specifying the name of the table
query	a list containing a valid query for the table, e.g. list(field = value)
endpoint	a string specifying the registry endpoint

Value

Returns a list of fields present in the specified entry

See Also

Other get functions: [get_components\(\)](#), [get_existing\(\)](#), [get_file_hash\(\)](#), [get_github_hash\(\)](#)

initialise	<i>Initialise code run</i>
------------	----------------------------

Description

Reads in a working config file, generates new Code Run entry, and returns a handle containing various metadata.

Usage

```
initialise(config, script)
```

Arguments

config	a string specifying the location of the working config file in the data store
script	a string specifying the location of the submission script in the data store

Value

Returns an object of class fdp, R6 containing metadata required by the Data Pipeline API

link_read	<i>Link path to external format data</i>
-----------	--

Description

Link path to external format data

Usage

```
link_read(handle, data_product)
```

Arguments

handle	an object of class fdp, R6 containing metadata required by the Data Pipeline API
data_product	a string representing an external object in the config.yaml file

Value

Returns a string specifying the location of the data product to be read

link_write	<i>Link path for external format data</i>
------------	---

Description

Link path for external format data

Usage

```
link_write(handle, data_product)
```

Arguments

handle	an object of class fdp, R6 containing metadata required by the Data Pipeline API
data_product	a string representing an external object in the config.yaml file

Value

Returns a string specifying the location in which the data product should be written

raise_issue	<i>raise_issue</i>
-------------	--------------------

Description

raise_issue

Usage

```
raise_issue(
  index,
  handle,
  component = NA,
  data_product,
  issue,
  severity,
  whole_object = FALSE
)
```

Arguments

index	index returned from link_*, read_(), or write()
handle	an object of class fdp, R6 containing metadata required by the Data Pipeline API
component	a string specifying the component name
data_product	a string specifying the data product name
issue	a string specifying the issue
severity	a numeric value specifying the severity
whole_object	a boolean flag specifying whether or not to reference the whole_object

raise_issue_config	<i>Raise issue with config file</i>
--------------------	-------------------------------------

Description

Raise issue with config file

Usage

```
raise_issue_config(handle, issue, severity)
```

Arguments

handle	an object of class fdp, R6 containing metadata required by the Data Pipeline API
issue	a string specifying the issue
severity	a numeric value specifying the severity

raise_issue_repo	<i>Raise issue with remote repository</i>
------------------	---

Description

Raise issue with remote repository

Usage

```
raise_issue_repo(handle, issue, severity)
```

Arguments

handle	an object of class fdp, R6 containing metadata required by the Data Pipeline API
issue	a string specifying the issue
severity	a numeric value specifying the severity

raise_issue_script	<i>Raise issue with submission script</i>
--------------------	---

Description

Raise issue with submission script

Usage

```
raise_issue_script(handle, issue, severity)
```

Arguments

handle	an object of class fdp, R6 containing metadata required by the Data Pipeline API
issue	a string specifying the issue
severity	a numeric value specifying the severity

random_hash	<i>random_hash</i>
-------------	--------------------

Description

Generates a random hash

Usage

random_hash()

read_array	<i>Read array component from HDF5 file</i>
------------	--

Description

Function to read array type data from hdf5 file.

Usage

read_array(handle, data_product, component)

Arguments

- | | |
|--------------|--|
| handle | an object of class fdp, R6 containing metadata required by the Data Pipeline API |
| data_product | a string specifying a data product |
| component | a string specifying a data product component |

Value

Returns an array with attached Dimension_i_title, Dimension_i_units, Dimension_i_values, and units attributes, if available

read_distribution	<i>Read distribution component from TOML file</i>
-------------------	---

Description

Function to read distribution type data from toml file.

Usage

```
read_distribution(handle, data_product, component)
```

Arguments

handle	an object of class fdp, R6 containing metadata required by the Data Pipeline API
data_product	a string specifying a data product
component	a string specifying a data product component

read_estimate	<i>Read estimate component from TOML file</i>
---------------	---

Description

Function to read point-estimate type data from toml file.

Usage

```
read_estimate(handle, data_product, component)
```

Arguments

handle	an object of class fdp, R6 containing metadata required by the Data Pipeline API
data_product	a string specifying a data product
component	a string specifying a data product component

read_table	<i>Read table component from HDF5 file</i>
------------	--

Description

Function to read table type data from hdf5 file.

Usage

```
read_table(handle, data_product, component)
```

Arguments

handle	an object of class fdp, R6 containing metadata required by the Data Pipeline API
data_product	a string specifying a data product
component	a string specifying a data product component

Value

Returns a `data.frame` with attached `column_units` attributes, if available

write_array	<i>Write array component to HDF5 file</i>
-------------	---

Description

Function to populate hdf5 file with array type data.

Usage

```
write_array(
  array,
  handle,
  data_product,
  component,
  description,
  dimension_names,
  dimension_values,
  dimension_units,
  units
)
```

Arguments

array	an array containing the data
handle	an object of class fdp, R6 containing metadata required by the Data Pipeline API
data_product	a string specifying the name of the data product
component	a string specifying a location within the hdf5 file
description	a string describing the data product component
dimension_names	a list where each element is a vector containing the labels associated with a particular dimension (e.g. element 1 corresponds to dimension 1, which corresponds to row names) and the name of each element describes the contents of each dimension (e.g. age classes).
dimension_values	(optional) a list of values corresponding to each dimension (e.g. list element 2 corresponds to columns)
dimension_units	(optional) a list of units corresponding to each dimension (e.g. list element 2 corresponds to columns)
units	(optional) a string specifying the units of the data as a whole

Value

Returns a handle index associated with the just written component, which can be used to raise an issue if necessary

See Also

Other write functions: [write_distribution\(\)](#), [write_estimate\(\)](#), [write_table\(\)](#)

write_distribution	<i>Write distribution component to TOML file</i>
--------------------	--

Description

Write distribution component to TOML file

Usage

```
write_distribution(
  distribution,
  parameters,
  handle,
  data_product,
  component,
  description
)
```

Arguments

distribution	a string specifying the name of the distribution
parameters	a list specifying the distribution parameters
handle	an object of class fdp, R6 containing metadata required by the Data Pipeline API
data_product	a string specifying the name of the data product
component	a string specifying a location within the toml file
description	a string describing the data product component

Value

Returns a handle index associated with the just written component, which can be used to raise an issue if necessary

See Also

Other write functions: [write_array\(\)](#), [write_estimate\(\)](#), [write_table\(\)](#)

write_estimate	<i>Write estimate component to TOML file</i>
----------------	--

Description

Function to populate toml file with point-estimate type data. If a file already exists at the specified location, an additional component will be added.

Usage

```
write_estimate(value, handle, data_product, component, description)
```

Arguments

value	an object of class numeric
handle	an object of class fdp, R6 containing metadata required by the Data Pipeline API
data_product	a string specifying the name of the data product
component	a string specifying a location within the toml file
description	a string describing the data product component

Value

Returns a handle index associated with the just written component, which can be used to raise an issue if necessary

See Also

Other write functions: [write_array\(\)](#), [write_distribution\(\)](#), [write_table\(\)](#)

write_table	<i>Write table component to HDF5 file</i>
-------------	---

Description

Function to populate hdf5 file with array type data.

Usage

```
write_table(
  df,
  handle,
  data_product,
  component,
  description,
  row_names,
  column_units
)
```

Arguments

df	an dataframe containing the data
handle	an object of class fdp, R6 containing metadata required by the Data Pipeline API
data_product	a string specifying the name of the data product
component	a string specifying a location within the hdf5 file,
description	a string describing the data product component
row_names	(optional) a vector of rownames
column_units	(optional) a vector comprising column units

Value

Returns a handle index associated with the just written component, which can be used to raise an issue if necessary

See Also

Other write functions: [write_array\(\)](#), [write_distribution\(\)](#), [write_estimate\(\)](#)

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