ResInsight Python API

Release 2020.04

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Contents

The ResInsight Python API allows you to interact with a running ResInsight instance from Python 3. This enables you to:

- Start ResInsight from Python.
- Communicate with a running ResInsight instance.
- Load a ResInsight project file.
- Load data files such as Eclipse EGRID files and summary files.
- Extract data to Python for further processing and automation.
- Export snapshots of graphics.
- And lots of other things...

CHAPTER 1

Documentation Sites

Please refer to https://resinsight.org for documentation on the graphical user interface, features and capabilites of **ResInsight**.

- resinsight.org - Documentation for latest stable release
- api.resinsight.org - Documentation of Python API
- beta.resinsight.org - Latest documentation (not yet released)

CHAPTER 2

Contents

2.1 Installation and Configuration

The ResInsight Python API is compatible with Python 3. As admin user, the necessary Python client package is available for install via the Python PIP package system:

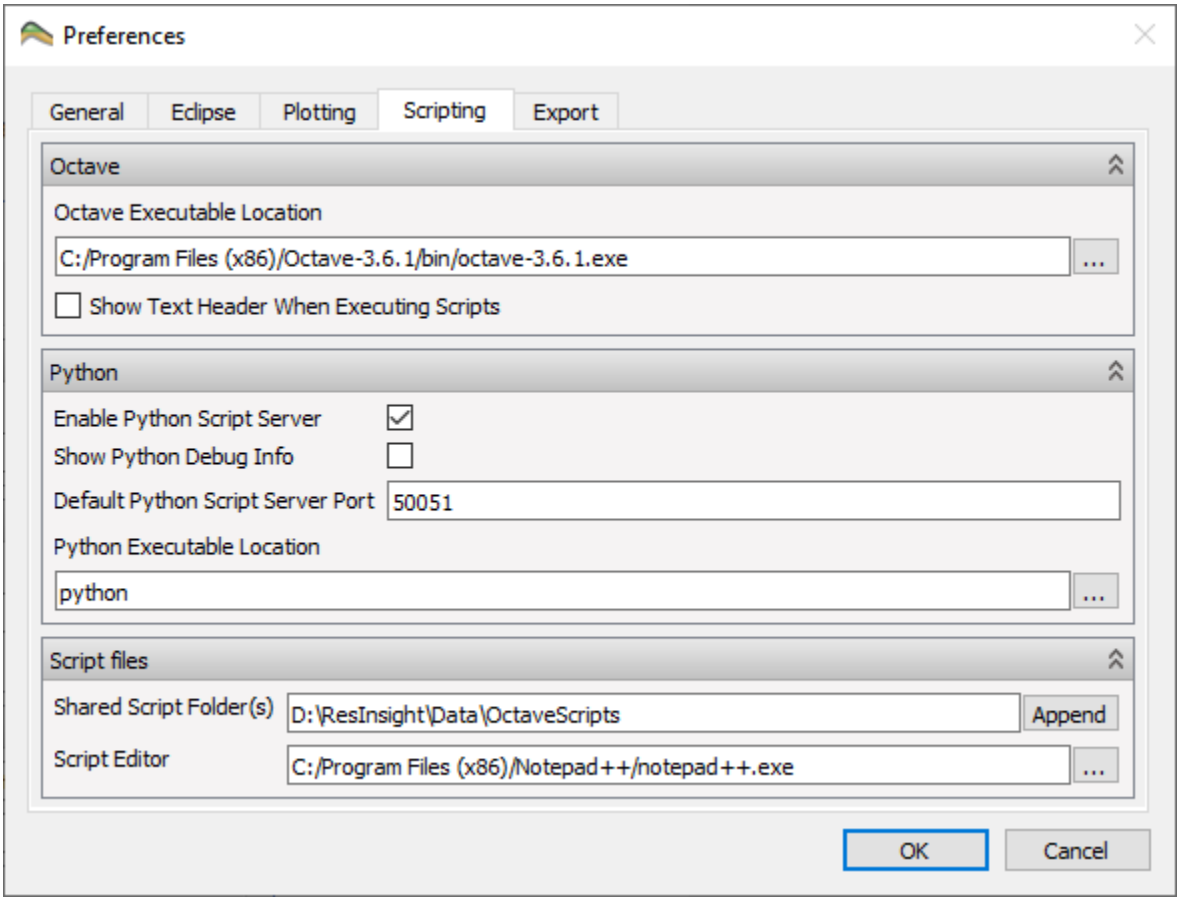
```
pip install rips
```

or as a regular user:

```
pip install --user rips
```

On some systems the *pip* command may have to be replaced by *python -m pip*.

To configure the **ResInsight Python Script Server**, check *Enable Python Script Server* and verify Python settings in the *Scripting* tab of the ResInsight *Preference* dialog.



The availability of the ResInsight Python Script Server can be confirmed by ResInsight *About* dialog. If unavailable, please consult ResInsight Build Instructions on resinsight.org.

2.2 Python Examples

This pages is created based on the content in the **PythonExamples** folder located inside the **rips** module, made available online for convenience.

2.2.1 AllCases

```
############################################################################
# This example will connect to ResInsight, retrieve a list of cases and print info
#
############################################################################

# Import the ResInsight Processing Server Module
import rips

# Connect to ResInsight
resinsight  = rips.Instance.find()
if resinsight is not None:
    # Get a list of all cases
    cases = resinsight.project.cases()
```

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```
    print ("Got " + str(len(cases)) + " cases: ")
    for case in cases:
        print("Case id: " + str(case.id))
        print("Case name: " + case.name)
        print("Case type: " + case.__class__.__name__)
        print("Case file name: " + case.file_path)
        print("Case reservoir bounding box:", case.reservoir_boundingbox())

        timesteps = case.time_steps()
        for t in timesteps:
            print("Year: " + str(t.year))
            print("Month: " + str(t.month))

        if isinstance(case, rips.EclipseCase):
            print ("Getting coarsening info for case: ", case.name, case.id)
            coarsening_info = case.coarsening_info()
            if coarsening_info:
                print("Coarsening information:")

            for c in coarsening_info:
                print("[{}, {}, {}] - [{}, {}, {}]".format(c.min.x, c.min.y, c.min.z,
                                                           c.max.x, c.max.y, c.max.z))
```

2.2.2 AllSimulationWells

```
################################################################################
# This example will connect to ResInsight, retrieve a list of
# simulation wells and print info
################################################################################

# Import the ResInsight Processing Server Module
import rips

# Connect to ResInsight
resinsight  = rips.Instance.find()
if resinsight is not None:
    # Get a list of all wells
    cases = resinsight.project.cases()

    for case in cases:
        print("Case id: " + str(case.id))
        print("Case name: " + case.name)

        timesteps = case.time_steps()
        sim_wells = case.simulation_wells()
        for sim_well in sim_wells:
            print("Simulation well: " + sim_well.name)

            for (tidx, timestep) in enumerate(timesteps):
                status = sim_well.status(tidx)
                cells = sim_well.cells(tidx)
                print("timestep: " + str(tidx) + " type: " + status.well_type + "␣
↪open: " + str(status.is_open) + " cells:" + str(len(cells)))
```

2.2.3 AllWells

```
############################################################################
# This example will connect to ResInsight, retrieve a list of wells and print info
#
############################################################################

# Import the ResInsight Processing Server Module
import rips

# Connect to ResInsight
resinsight  = rips.Instance.find()
if resinsight is not None:
    # Get a list of all wells
    wells = resinsight.project.well_paths()

    print ("Got " + str(len(wells)) + " wells: ")
    for well in wells:
        print("Well name: " + well.name)
```

2.2.4 AlterWbsPlot

```
# Load ResInsight Processing Server Client Library
import rips
import tempfile

# Connect to ResInsight instance
resinsight = rips.Instance.find()

# Get the project
project = resinsight.project

# Find all the well bore stability plots in the project
wbsplots = project.descendants(rips.WellBoreStabilityPlot)

# Chose a sensible output folder
dirname = tempfile.gettempdir()

# Loop through all Well Bore Stability plots
for wbsplot in wbsplots:
    # Set depth type a parameter and export snapshot
    wbsplot.depth_type = "TRUE_VERTICAL_DEPTH_RKB"

    # Example of setting parameters for existing plots
    params = wbsplot.parameters()
    params.user_poisson_ratio = 0.12345
    params.update()
    wbsplot.update()
    wbsplot.export_snapshot(export_folder=dirname)
```

2.2.5 CaseGridGroup

```
import os
import rips

resinsight  = rips.Instance.find()

case_paths = []
case_paths.append("C:/Users/lindk/source/repos/ResInsight/TestModels/Case_with_10_
↪timesteps/Real0/BRUGGE_0000.EGRID")
case_paths.append("C:/Users/lindk/source/repos/ResInsight/TestModels/Case_with_10_
↪timesteps/Real10/BRUGGE_0010.EGRID")
for case_path in case_paths:
    assert os.path.exists(case_path), "You need to set valid case paths for this␣
↪script to work"

case_group = resinsight.project.create_grid_case_group(case_paths=case_paths)

case_group.print_object_info()

#stat_cases = caseGroup.statistics_cases()
#case_ids = []
#for stat_case in stat_cases:
#    stat_case.set_dynamic_properties_to_calculate(["SWAT"])
#    case_ids.append(stat_case.id)

case_group.compute_statistics()

view = case_group.views()[0]
cell_result = view.cell_result()
cell_result.set_result_variable("PRESSURE_DEV")
```

2.2.6 CaseInfoStreaming

```
############################################################################
# This example will get the cell info for the active cells for the first case
############################################################################

# Import the ResInsight Processing Server Module
import rips

# Connect to ResInsight
resinsight  = rips.Instance.find()

# Get the first case. This will fail if you haven't loaded any cases
case = resinsight.project.cases()[0]

# Get the cell count object
cell_counts = case.cell_count()
print("Number of active cells: " + str(cell_counts.active_cell_count))
print("Total number of reservoir cells: " + str(cell_counts.reservoir_cell_count))

# Get information for all active cells
active_cell_infos = case.cell_info_for_active_cells()
```

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```
# A simple check on the size of the cell info
assert(cell_counts.active_cell_count == len(active_cell_infos))

# Print information for the first active cell
print("First active cell: ")
print(active_cell_infos[0])
```

2.2.7 CellResultData

```
########################################################################
# This script retrieves cell result data and alters it
########################################################################
import rips

resinsight  = rips.Instance.find()

view = resinsight.project.views()[0]
results = view.cell_result_data()
print ("Number of result values: ", len(results))

newresults = []
for i in range(0, len(results)):
    newresults.append(results[i] * -1.0)
view.set_cell_result_data(newresults)
```

2.2.8 CommandExample

```
########################################################################################
# This example will show setting time step, window size and export snapshots and␣
↪properties
########################################################################################
import os
import tempfile
import rips

# Load instance
resinsight = rips.Instance.find()

# Set window sizes
resinsight.set_main_window_size(width=800, height=500)
resinsight.set_plot_window_size(width=1000, height=1000)


# Retrieve first case
case = resinsight.project.cases()[0]

# Get a view
view1 = case.views()[0]
```

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```
# Clone the view
view2 = view1.clone()

# Set the time step for view1 only
view1.set_time_step(time_step=2)

# Set cell result to SOIL
view1.apply_cell_result(result_type='DYNAMIC_NATIVE', result_variable='SOIL')


# Create a temporary directory which will disappear at the end of this script
# If you want to keep the files, provide a good path name instead of tmpdirname
with tempfile.TemporaryDirectory(prefix="rips") as tmpdirname:
    print("Temporary folder: ", tmpdirname)

    # Set export folder for snapshots and properties
    resinsight.set_export_folder(export_type='SNAPSHOTS', path=tmpdirname)
    resinsight.set_export_folder(export_type='PROPERTIES', path=tmpdirname)

    # Export all snapshots
    resinsight.project.export_snapshots()

    assert(len(os.listdir(tmpdirname)) > 0)

    # Export properties in the view
    view1.export_property()

    # Check that the exported file exists
    expected_file_name = case.name + "-" + str("3D_View") + "-" + "T2" + "-SOIL"
    full_path = tmpdirname + "/" + expected_file_name

    # Print contents of temporary folder
    print(os.listdir(tmpdirname))

    assert(os.path.exists(full_path))
```

2.2.9 Create Fracture

```
# Load ResInsight Processing Server Client Library
import rips
import tempfile
from os.path import expanduser

# Connect to ResInsight instance
resinsight = rips.Instance.find()
# Example code
project = resinsight.project

# Create fracture model template
home_dir = expanduser("~")
elastic_properties_file_path = home_dir + "/elastic_properties.csv"
facies_properties_file_path = home_dir + "/facies_id.roff"

fmt_collection = project.descendants(rips.FractureModelTemplateCollection)[0]
```

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```
fracture_model_template = fmt_collection.new_fracture_model_template(elastic_
↪properties_file_path=elastic_properties_file_path,
                                                                      facies_
↪properties_file_path=facies_properties_file_path)
fracture_model_template.overburden_formation = "Garn"
fracture_model_template.overburden_facies = "Shale"
fracture_model_template.underburden_formation = "Garn"
fracture_model_template.underburden_facies = "Shale"
fracture_model_template.overburden_height = 68
fracture_model_template.update()
print("Overburden: ", fracture_model_template.overburden_formation)


# Set eclipse result for facies definition
eclipse_result = fracture_model_template.facies_properties().facies_definition()
eclipse_result.result_type = "INPUT_PROPERTY"
eclipse_result.result_variable = "OPERNUM_1"
eclipse_result.update()


# Find a well
well_path = project.well_path_by_name("B-2_H")
print("well path:", well_path)
fracture_model_collection = project.descendants(rips.FractureModelCollection)[0]

# Create fracture model at a give measured depth
measured_depth = 3200.0
fracture_model = fracture_model_collection.new_fracture_model(well_path=well_path,␣
↪measured_depth=measured_depth, fracture_model_template=fracture_model_template)

cases = resinsight.project.cases()
case = cases[0]

# Use the last time step
time_steps = case.time_steps()
time_step = time_steps[len(time_steps) - 1]


fracture_model_plot_collection = project.descendants(rips.
↪FractureModelPlotCollection)[0]
fracture_model_plot = fracture_model_plot_collection.new_fracture_model_plot(eclipse_
↪case=case, fracture_model=fracture_model, time_step=time_step)

export_folder = tempfile.gettempdir()

print("Exporting fracture model to: ", export_folder)
fracture_model_plot.export_to_file(directory_path=export_folder)

fracture_model_plot.export_snapshot(export_folder=export_folder)
```

2.2.10 Create WBS Plot

```
import os
import grpc
```

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```
# Load ResInsight Processing Server Client Library
import rips
# Connect to ResInsight instance
resInsight = rips.Instance.find()

# Get all GeoMech cases
cases = resInsight.project.descendants(rips.GeoMechCase)

# Get all well paths
well_paths = resInsight.project.well_paths()

# Ensure there's at least one well path
if len(well_paths) < 1:
    print("No well paths in project")
    exit(1)

# Create a set of WbsParameters
params = rips.WbsParameters()
params.user_poisson_ratio = 0.23456
params.user_ucs = 123

# Loop through all cases
for case in cases:
    assert(isinstance(case, rips.GeoMechCase))
    min_res_depth, max_res_depth = case.reservoir_depth_range()

    # Find a good output path
    case_path = case.file_path
    folder_name = os.path.dirname(case_path)

    # Import formation names
    case.import_formation_names(formation_files=['D:/Projects/ResInsight-regression-
↪test/ModelData/norne/Norne_ATW2013.lyr'])

    # create a folder to hold the snapshots
    dirname = os.path.join(folder_name, 'snapshots')
    print("Exporting to: " + dirname)

    for well_path in well_paths[0:4]: # Loop through the first five well paths
        # Create plot with parameters
        wbsplot = case.create_well_bore_stability_plot(well_path=well_path.name, time_
↪step=0, parameters=params)
```

2.2.11 ErrorHandling

```
########################################################################
# This example demonstrates the use of ResInsight exceptions
# for proper error handling
########################################################################

import rips
import grpc
import tempfile

resinsight     = rips.Instance.find()
```

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```
case = None

# Try loading a non-existing case. We should get a grpc.RpcError exception from the␣
↪server
try:
    case = resinsight.project.load_case("Nonsense")
except grpc.RpcError as e:
    print("Expected Server Exception Received while loading case: ", e.code(), e.
↪details())

# Try loading well paths from a non-existing folder.  We should get a grpc.RpcError␣
↪exception from the server
try:
    well_path_files = resinsight.project.import_well_paths(well_path_folder="NONSENSE/
↪NONSENSE")
except grpc.RpcError as e:
    print("Expected Server Exception Received while loading wellpaths: ", e.code(), e.
↪details())

# Try loading well paths from an existing but empty folder. We should get a warning.
try:
    with tempfile.TemporaryDirectory() as tmpdirname:
        well_path_files = resinsight.project.import_well_paths(well_path_
↪folder=tmpdirname)
        assert(len(well_path_files) == 0)
        assert(resinsight.project.has_warnings())
        print("Should get warnings below")
        for warning in resinsight.project.warnings():
            print (warning)
except grpc.RpcError as e:
    print("Unexpected Server Exception caught!!!", e)

case = resinsight.project.case(case_id=0)
if case is not None:
    results = case.active_cell_property('STATIC_NATIVE', 'PORO', 0)
    active_cell_count = len(results)

    # Send the results back to ResInsight inside try / except construct
    try:
        case.set_active_cell_property(results, 'GENERATED', 'POROAPPENDED', 0)
        print("Everything went well as expected")
    except: # Match any exception, but it should not happen
        print("Ooops!")

    # Add another value, so this is outside the bounds of the active cell result␣
↪storage
    results.append(1.0)

    # This time we should get a grpc.RpcError exception, which is a server side error.
    try:
        case.set_active_cell_property(results, 'GENERATED', 'POROAPPENDED', 0)
        print("Everything went well??")
    except grpc.RpcError as e:
        print("Expected Server Exception Received: ", e)
    except IndexError:
        print ("Got index out of bounds error. This shouldn't happen here")
```

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```
    # With a chunk size exactly matching the active cell count the server will not
    # be able to see any error as it will successfully close the stream after␣
↪receiving
    # the correct number of values, even if the python client has more chunks to send
    case.chunk_size = active_cell_count

    try:
        case.set_active_cell_property(results, 'GENERATED', 'POROAPPENDED', 0)
        print("Everything went well??")
    except grpc.RpcError as e:
        print("Got unexpected server exception", e, "This should not happen now")
    except IndexError:
        print ("Got expected index out of bounds error on client side")
```

2.2.12 ExportContourMaps

```
# Load ResInsight Processing Server Client Library
import rips
import tempfile
import pathlib

# Connect to ResInsight instance
resInsight = rips.Instance.find()

# Data will be written to temp
tmpdir = pathlib.Path(tempfile.gettempdir())

# Find all eclipse contour maps of the project
contour_maps = resInsight.project.descendants(rips.EclipseContourMap)
print("Number of eclipse contour maps:", len(contour_maps))

# Export the contour maps to a text file
for (index, contour_map) in enumerate(contour_maps):
    filename = "eclipse_contour_map" + str(index) + ".txt"
    filepath = tmpdir / filename
    print("Exporting to:", filepath)
    contour_map.export_to_text(str(filepath))

# The contour maps is also available for a Case
cases = resInsight.project.cases()
for case in cases:
    contour_maps = case.descendants(rips.GeoMechContourMap)
    # Export the contour maps to a text file
    for (index, contour_map) in enumerate(contour_maps):
        filename = "geomech_contour_map" + str(index) + ".txt"
        filepath = tmpdir / filename
        print("Exporting to:", filepath)
        contour_map.export_to_text(str(filepath))
```

2.2.13 ExportPlots

```
# Import the tempfile module
import tempfile
# Load ResInsight Processing Server Client Library
import rips
# Connect to ResInsight instance
resInsight = rips.Instance.find()

# Get a list of all plots
plots = resInsight.project.plots()

export_folder = tempfile.mkdtemp()

print("Exporting to: " + export_folder)

for plot in plots:
        plot.export_snapshot(export_folder=export_folder)
        plot.export_snapshot(export_folder=export_folder, output_format='PDF')
        if isinstance(plot, rips.WellLogPlot):
                plot.export_data_as_las(export_folder=export_folder)
                plot.export_data_as_ascii(export_folder=export_folder)
```

2.2.14 ExportSnapshots

```
########################################################################
# This script will export snapshots for two properties in every loaded case
# And put them in a snapshots folder in the same folder as the case grid
########################################################################
import os
import rips

# Load instance
resinsight = rips.Instance.find()
cases = resinsight.project.cases()

# Set main window size
resinsight.set_main_window_size(width=800, height=500)

n = 5                           # every n-th time_step for snapshot
property_list = ['SOIL', 'PRESSURE'] # list of parameter for snapshot

print ("Looping through cases")
for case in cases:
    print("Case name: ", case.name)
    print("Case id: ", case.id)
    # Get grid path and its folder name
    case_path = case.file_path
    folder_name = os.path.dirname(case_path)

    # create a folder to hold the snapshots
    dirname = os.path.join(folder_name, 'snapshots')

    if os.path.exists(dirname) is False:
        os.mkdir(dirname)
```

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```
    print ("Exporting to folder: " + dirname)
    resinsight.set_export_folder(export_type='SNAPSHOTS', path=dirname)

    time_steps = case.time_steps()
    print('Number of time_steps: ' + str(len(time_steps)))

    for view in case.views():
        if view.is_eclipse_view():
            for property in property_list:
                view.apply_cell_result(result_type='DYNAMIC_NATIVE', result_
↪variable=property)
        for time_step in range(0, len(time_steps), 10):
            view.set_time_step(time_step = time_step)
            view.export_snapshot()
```

2.2.15 GridInformation

```
################################################################################
# This example prints information about the grids of all cases in the current project
################################################################################

import rips

resinsight  = rips.Instance.find()

cases = resinsight.project.cases()
print("Number of cases found: ", len(cases))
for case in cases:
    print(case.name)
    grids = case.grids()
    print("Number of grids: ", len(grids))
    for grid in grids:
        print("Grid dimensions: ", grid.dimensions())
```

2.2.16 Import Well Paths

```
# Load ResInsight Processing Server Client Library
import rips
# Connect to ResInsight instance
resInsight = rips.Instance.find()

well_paths = resInsight.project.import_well_paths(well_path_folder='D:/Projects/
↪ResInsight-regression-test/ModelData/norne/wellpaths')
if resInsight.project.has_warnings():
    for warning in resInsight.project.warnings():
        print(warning)
```

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```
for well_path in well_paths:
    print("Imported from folder: " + well_path.name)

well_paths = resInsight.project.import_well_paths(well_path_files=['D:/Projects/
↪ResInsight-regression-test/ModelData/Norne_WellPaths/E-3H.json',
                                                                   'D:/Projects/
↪ResInsight-regression-test/ModelData/Norne_WellPaths/C-1H.json'])
if resInsight.project.has_warnings():
    for warning in resInsight.project.warnings():
        print(warning)


for well_path in well_paths:
    print("Imported from individual files: " + well_path.name)


well_path_names = resInsight.project.import_well_log_files(well_log_folder='D:/
↪Projects/ResInsight-regression-test/ModelData/Norne_PLT_LAS')
if resInsight.project.has_warnings():
    for warning in resInsight.project.warnings():
        print(warning)

for well_path_name in well_path_names:
    print("Imported well log file for: " + well_path_name)
```

2.2.17 InputPropTestAsync

```
################################################################################
↪##
# This example generates a derived property in an asynchronous manner
# Meaning it does not wait for all the data for each stage to be read before␣
↪proceeding
################################################################################
↪##
import rips
import time

# Internal function for creating a result from a small chunk of poro and permx results
# The return value of the function is a generator for the results rather than the␣
↪result itself.
def create_result(poro_chunks, permx_chunks):
    # Loop through all the chunks of poro and permx in order
    for (poroChunk, permxChunk) in zip(poro_chunks, permx_chunks):
        resultChunk = []
        # Loop through all the values inside the chunks, in order
        for (poro, permx) in zip(poroChunk.values, permxChunk.values):
            resultChunk.append(poro * permx)
        # Return a generator object that behaves like a Python iterator
        yield resultChunk

resinsight     = rips.Instance.find()
start = time.time()
case = resinsight.project.cases()[0]

# Get a generator for the poro results. The generator will provide a chunk each time␣
↪it is iterated
```

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```
poro_chunks = case.active_cell_property_async('STATIC_NATIVE', 'PORO', 0)
# Get a generator for the permx results. The generator will provide a chunk each time␣
↪it is iterated
permx_chunks = case.active_cell_property_async('STATIC_NATIVE', 'PERMX', 0)

# Send back the result with the result provided by a generator object.
# Iterating the result generator will cause the script to read from the poro and␣
↪permx generators
# And return the result of each iteration
case.set_active_cell_property_async(create_result(poro_chunks, permx_chunks),
                                    'GENERATED', 'POROPERMXAS', 0)

end = time.time()
print("Time elapsed: ", end - start)
print("Transferred all results back")
view = case.views()[0].apply_cell_result('GENERATED', 'POROPERMXAS')
```

2.2.18 InputPropTestSync

```
################################################################################
↪##
# This example generates a derived property in an synchronous manner
# Meaning it completes reading each result before calculating the derived result
# See InputPropTestAsync for how to do this asynchronously instead.
################################################################################
↪##
import rips
import time
import grpc

resinsight     = rips.Instance.find()
start = time.time()
case = resinsight.project.cases()[0]

# Read poro result into list
poro_results = case.active_cell_property('STATIC_NATIVE', 'PORO', 0)
# Read permx result into list
permx_results = case.active_cell_property('STATIC_NATIVE', 'PERMX', 0)

# Generate output result
results = []
for (poro, permx) in zip(poro_results, permx_results):
    results.append(poro * permx)

try:
    # Send back output result
    case.set_active_cell_property(results, 'GENERATED', 'POROPERMXSY', 0)
except grpc.RpcError as e:
    print("Exception Received: ", e)


end = time.time()
print("Time elapsed: ", end - start)
print("Transferred all results back")
```

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```
view = case.views()[0].apply_cell_result('GENERATED', 'POROPERMXSY')
```

2.2.19 InstanceExample

```
########################################
# This example connects to ResInsight
########################################
import rips

resinsight  = rips.Instance.find()

if resinsight is None:
    print('ERROR: could not find ResInsight')
else:
        print('Successfully connected to ResInsight')
```

2.2.20 Launch Using Command Line Options

```
# Load ResInsight Processing Server Client Library
import rips
# Launch ResInsight with last project file and a Window size of 600x1000 pixels
resinsight = rips.Instance.launch(command_line_parameters=['--last', '--size', 600,␣
↪1000])
# Get a list of all cases
cases = resinsight.project.cases()

print ("Got " + str(len(cases)) + " cases: ")
for case in cases:
    print("Case name: " + case.name)
    print("Case grid path: " + case.file_path)
```

2.2.21 ModeledWellPath

```
# Load ResInsight Processing Server Client Library
import rips
# Connect to ResInsight instance
resinsight = rips.Instance.find()
# Example code
print("ResInsight version: " + resinsight.version_string())

modeled_well_paths = resinsight.project.descendants(rips.ModeledWellPath)

for wellpath in modeled_well_paths:
    geometry = wellpath.well_path_geometry()
    geometry.print_object_info()
    reference_point = geometry.reference_point
    reference_point[0] += 100
    geometry.update()
    geometry.print_object_info()
```

2.2.22 NewSummaryPlot

```
# Load ResInsight Processing Server Client Library
import rips
# Connect to ResInsight instance
resinsight = rips.Instance.find()
# Example code
project = resinsight.project

summary_cases = project.descendants(rips.SummaryCase)
summary_plot_collection = project.descendants(rips.SummaryPlotCollection)[0]
if len(summary_cases) > 0:
    summary_plot = summary_plot_collection.new_summary_plot(summary_cases=summary_
↪cases, address="FOP*")
```

2.2.23 ReplaceCase

```
# Load ResInsight Processing Server Client Library
import rips
# Connect to ResInsight instance
resinsight = rips.Instance.find()
# Example code
print("ResInsight version: " + resinsight.version_string())

case = resinsight.project.case(case_id=0)
case.replace(new_grid_file='C:/Users/lindkvis/Projects/ResInsight/TestModels/Case_
↪with_10_timesteps/Real0/BRUGGE_0000.EGRID')
```

2.2.24 SelectedCases

```
########################################################################
# This example returns the currently selected cases in ResInsight
# Because running this script in the GUI takes away the selection
# This script does not run successfully from within the ResInsight GUI
# And will need to be run from the command line separately from ResInsight
########################################################################

import rips

resinsight  = rips.Instance.find()
if resinsight is not None:
    cases = resinsight.project.selected_cases()

    print ("Got " + str(len(cases)) + " cases: ")
    for case in cases:
        print(case.name)
        for property in case.available_properties('DYNAMIC_NATIVE'):
            print(property)
```

2.2.25 SelectedCells

```
############################################################################
# This example prints center and corners for the currently selected cells
# in ResInsight
############################################################################

import rips

resinsight  = rips.Instance.find()
if resinsight is not None:
    cases = resinsight.project.cases()

    print ("Got " + str(len(cases)) + " cases: ")
    for case in cases:
        print(case.name)
        cells = case.selected_cells()
        print("Found " + str(len(cells)) + " selected cells")

        time_step_info = case.time_steps()

        for (idx, cell) in enumerate(cells):
            print("Selected cell: [{}, {}, {}] grid: {}".format(cell.ijk.i+1, cell.
↪ijk.j+1, cell.ijk.k+1, cell.grid_index))

            # Get the grid and dimensions
            grid = case.grids()[cell.grid_index]
            dimensions = grid.dimensions()

            # Map ijk to cell index
            cell_index = dimensions.i * dimensions.j * cell.ijk.k + dimensions.i *␣
↪cell.ijk.j + cell.ijk.i

            # Print the cell center
            cell_centers = grid.cell_centers()
            cell_center = cell_centers[cell_index]
            print("Cell center: [{}, {}, {}]".format(cell_center.x, cell_center.y,␣
↪cell_center.z))

            # Print the cell corners
            cell_corners = grid.cell_corners()[cell_index]
            print("Cell corners:")
            print("c0:\n" + str(cell_corners.c0))
            print("c1:\n" + str(cell_corners.c1))
            print("c2:\n" + str(cell_corners.c2))
            print("c3:\n" + str(cell_corners.c3))
            print("c4:\n" + str(cell_corners.c4))
            print("c5:\n" + str(cell_corners.c5))
            print("c6:\n" + str(cell_corners.c6))
            print("c7:\n" + str(cell_corners.c7))

            for (tidx, timestep) in enumerate(time_step_info):
                # Read the full SOIL result for time step
                soil_results = case.selected_cell_property('DYNAMIC_NATIVE', 'SOIL',␣
↪tidx)
                print("SOIL: {} ({}.{}.{})".format(soil_results[idx], timestep.year,␣
↪timestep.month, timestep.day))
```

2.2.26 SetCellResult

```
########################################################################
# This script applies a cell result to the first view in the project
########################################################################
import rips

resinsight  = rips.Instance.find()

view = resinsight.project.views()[0]
view.apply_cell_result(result_type='STATIC_NATIVE', result_variable='DX')
```

2.2.27 SetFlowDiagnosticsResult

```
########################################################################
# This script applies a flow diagnostics cell result to the first view in the project
########################################################################

# Load ResInsight Processing Server Client Library
import rips
# Connect to ResInsight instance
resinsight = rips.Instance.find()

view = resinsight.project.view(view_id=1)
#view.apply_flow_diagnostics_cell_result(result_variable='Fraction',
#                                        selection_mode='FLOW_TR_INJ_AND_PROD')

# Example of setting individual wells. Commented out because well names are case␣
↪specific.
view.apply_flow_diagnostics_cell_result(result_variable='Fraction',
                                        selection_mode='FLOW_TR_BY_SELECTION',
                                        injectors = ['C-1H', 'C-2H', 'F-2H'],
                                        producers = ['B-1AH', 'B-3H', 'D-1H'])
```

2.2.28 SetGridProperties

```
########################################################################
# This script sets values for SOIL for all grid cells in the first case in the project
########################################################################
import rips

resinsight     = rips.Instance.find()

case = resinsight.project.case(case_id=0)
total_cell_count = case.cell_count().reservoir_cell_count

values = []
for i in range(0, total_cell_count):
    values.append(i % 2 * 0.75);

print("Applying values to full grid")
case.set_grid_property(values, 'DYNAMIC_NATIVE', 'SOIL', 0)
```

2.2.29 SoilAverageAsync

```
################################################################################
#####
# This example will asynchronously calculate the average value for SOIL for all time␣
steps
################################################################################
#####

import rips
import itertools
import time

resinsight     = rips.Instance.find()

start          = time.time()

# Get the case with case id 0
case           = resinsight.project.case(case_id=0)

# Get a list of all time steps
timeSteps      = case.time_steps()

averages = []
for i in range(0, len(timeSteps)):
    # Get the results from time step i asynchronously
    # It actually returns a generator object almost immediately
        result_chunks = case.active_cell_property_async('DYNAMIC_NATIVE', 'SOIL', i)
        mysum = 0.0
        count = 0
    # Loop through and append the average. each time we loop resultChunks
    # We will trigger a read of the input data, meaning the script will start
    # Calculating averages before the whole resultValue for this time step has been␣
received
        for chunk in result_chunks:
                mysum += sum(chunk.values)
                count += len(chunk.values)

        averages.append(mysum/count)

end = time.time()
print("Time elapsed: ", end - start)
print(averages)
```

2.2.30 SoilAverageSync

```
################################################################################
#####
# This example will synchronously calculate the average value for SOIL for all time␣
steps
################################################################################
#####
import rips
import itertools
import time
```

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```
resinsight     = rips.Instance.find()

start          = time.time()

# Get the case with case id 0
case           = resinsight.project.case(case_id=0)

# Get a list of all time steps
time_steps      = case.time_steps()

averages = []
for i in range(0, len(time_steps)):
    # Get a list of all the results for time step i
        results = case.active_cell_property('DYNAMIC_NATIVE', 'SOIL', i)
        mysum = sum(results)
        averages.append(mysum/len(results))

end = time.time()
print("Time elapsed: ", end - start)
print(averages)
```

2.2.31 SoilPorvAsync

```
################################################################################
# This example will create a derived result for each time step asynchronously
################################################################################

import rips
import time

# Internal function for creating a result from a small chunk of soil and porv results
# The return value of the function is a generator for the results rather than the␣
↪result itself.
def create_result(soil_chunks, porv_chunks):
    for (soil_chunk, porv_chunk) in zip(soil_chunks, porv_chunks):
        resultChunk = []
        number = 0
        for (soil_value, porv_value) in zip(soil_chunk.values, porv_chunk.values):
            resultChunk.append(soil_value * porv_value)
        # Return a Python generator
        yield resultChunk

resinsight    = rips.Instance.find()
start         = time.time()
case          = resinsight.project.cases()[0]
timeStepInfo = case.time_steps()

# Get a generator for the porv results. The generator will provide a chunk each time␣
↪it is iterated
porv_chunks    = case.active_cell_property_async('STATIC_NATIVE', 'PORV', 0)

# Read the static result into an array, so we don't have to transfer it for each␣
↪iteration
# Note we use the async method even if we synchronise here, because we need the␣
↪values chunked
```

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```
# ... to match the soil chunks
porv_array = []
for porv_chunk in porv_chunks:
    porv_array.append(porv_chunk)

for i in range (0, len(timeStepInfo)):
    # Get a generator object for the SOIL property for time step i
    soil_chunks = case.active_cell_property_async('DYNAMIC_NATIVE', 'SOIL', i)
    # Create the generator object for the SOIL * PORV derived result
    result_generator = create_result(soil_chunks, iter(porv_array))
    # Send back the result asynchronously with a generator object
    case.set_active_cell_property_async(result_generator, 'GENERATED', 'SOILPORVAsync
↪', i)

end = time.time()
print("Time elapsed: ", end - start)

print("Transferred all results back")

view = case.views()[0].apply_cell_result('GENERATED', 'SOILPORVAsync')
```

2.2.32 SoilPorvSync

```
################################################################################
# This example will create a derived result for each time step synchronously
################################################################################

import rips
import time

resinsight = rips.Instance.find()
start = time.time()
case       = resinsight.project.cases()[0]

# Read the full porv result
porv_results = case.active_cell_property('STATIC_NATIVE', 'PORV', 0)
time_step_info = case.time_steps()

for i in range (0, len(time_step_info)):
    # Read the full SOIl result for time step i
    soil_results = case.active_cell_property('DYNAMIC_NATIVE', 'SOIL', i)

    # Generate the result by looping through both lists in order
    results = []
    for (soil, porv) in zip(soil_results, porv_results):
        results.append(soil * porv)

    # Send back result
    case.set_active_cell_property(results, 'GENERATED', 'SOILPORVSync', i)

end = time.time()
print("Time elapsed: ", end - start)

print("Transferred all results back")
```

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```
view = case.views()[0].apply_cell_result('GENERATED', 'SOILPORVSync')
```

2.2.33 SummaryCases

```
# Load ResInsight Processing Server Client Library
import rips
# Connect to ResInsight instance
resinsight = rips.Instance.find()
# Example code

# Specific summary case with case_id = 1
summary_case = resinsight.project.summary_case(case_id=1)
summary_case.print_object_info()

# All summary cases
summary_cases = resinsight.project.summary_cases()
for summary_case in summary_cases:
    print("Summary case found: ", summary_case.short_name)
```

2.2.34 SummaryVectors

```
import rips
import time

resinsight = rips.Instance.find()

project = resinsight.project

# Use the following commented lines to import a file from disk
# filename = "path/to/file/1_R001_REEK-0.SMSPEC"
# summary_case = project.import_summary_case(filename)

# Assumes at least one summery case loaded with case_id 1
summary_case = project.summary_case(1)
if summary_case is None:
    print("No summary case found")
    exit()

vector_name = "FOPT"
summary_data = summary_case.summary_vector_values(vector_name)

print("Data for summary vector " + vector_name)
print(summary_data.values)

time_steps = summary_case.available_time_steps()
print(time_steps.values)

summary_data_sampled = summary_case.resample_values("FOPT", "QUARTER")
print("\nResampled data")

for t, value in zip(summary_data_sampled.time_steps, summary_data_sampled.values):
    print(time.strftime("%a, %d %b %Y ", time.gmtime(t)) + " | " + str(value))
```

2.2.35 SurfaceImport

```
# Load ResInsight Processing Server Client Library
import rips
# Connect to ResInsight instance
resinsight = rips.Instance.find()
print("ResInsight version: " + resinsight.version_string())

# Example code

# get the project
project = resinsight.project

# get the topmost surface folder from the project
surfacefolder = project.surface_folder()

# list of surface files to load
filenames = ["surface1.ts", "surface2.ts", "surface3.ts"]

# Load the files into the top level
for surffile in filenames:
    surface = surfacefolder.import_surface(surffile)
    if surface is None:
        print("Could not import the surface " + surffile)

# add a subfolder
subfolder = surfacefolder.add_folder("ExampleFolder")

# load the same surface multiple times using increasing depth offsets
# store them in the new subfolder we just created
for offset in range(0, 200, 20):
    surface = subfolder.import_surface("mysurface.ts")
    if surface:
        surface.depth_offset = offset
        surface.update()
    else:
        print("Could not import surface.")

# get an existing subfolder
existingfolder = project.surface_folder("ExistingFolder")
if existingfolder is None:
    print("Could not find the specified folder.")
```

2.2.36 ViewExample

```
############################################################
# This example will alter the views of all cases
# By setting the background color and toggle the grid box
# Also clones the first view
############################################################
import rips
# Connect to ResInsight instance
resinsight = rips.Instance.find()

# Check if connection worked
```

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```
if resinsight is not None:
    # Get a list of all cases
    cases = resinsight.project.cases()
    for case in cases:
        # Get a list of all views
        views = case.views()
        for view in views:
            # Set some parameters for the view
            view.show_grid_box = not view.show_grid_box
            view.background_color = "#3388AA"
            # Update the view in ResInsight
            view.update()
        # Clone the first view
        new_view = views[0].clone()
        new_view.background_color = "#FFAA33"
        new_view.update()
        view.show_grid_box = False
        view.set_visible(False)
        view.update()
```

2.3 rips package

2.3.1 rips.case module

Module containing the Case class

ResInsight Case class

Operate on a ResInsight case specified by a Case Id integer. Not meant to be constructed separately but created by one of the following methods in Project: loadCase, case, allCases, selectedCases

Result Definition

When working with grid case results, the following two argumenst are used in many functions to identify a result

Result Definition enums:

```
property_type            |        | porosity_model
(str enum)               |        | (str enum)
------------------------ | ------ | --------------
DYNAMIC_NATIVE           |        | MATRIX_MODEL
STATIC_NATIVE            |        | FRACTURE_MODEL
SOURSIMRL                |        |
GENERATED                |        |
INPUT_PROPERTY           |        |
FORMATION_NAMES          |        |
FLOW_DIAGNOSTICS         |        |
INJECTION_FLOODING       |        |
```

rips.case.**id**
Case Id corresponding to case Id in ResInsight project.

Type int

rips.case.**name**
Case name

Type str

rips.case.**group_id**
Case Group id

Type int

rips.case.**chunkSize**
The size of each chunk during value streaming. A good chunk size is 64KiB = 65536B. Meaning the ideal number of doubles would be 8192. However we need overhead space, so the default is 8160. This leaves 256B for overhead.

Type int

rips.case.**active_cell_centers**(*self*, *porosity_model='MATRIX_MODEL'*)
Get a cell centers for all active cells. Synchronous, so returns a list.

Parameters **porosity_model** (*str*) – string enum. See available()

Returns A list of Vec3d

rips.case.**active_cell_centers_async**(*self*, *porosity_model='MATRIX_MODEL'*)
Get a cell centers for all active cells. Async, so returns an iterator

Parameters **porosity_model** (*str*) – string enum. See available()

Returns An iterator to a chunk object containing an array of Vec3d values. Loop through the chunks and then the values within the chunk to get all values.

rips.case.**active_cell_corners**(*self*, *porosity_model='MATRIX_MODEL'*)
Get a cell corners for all active cells. Synchronous, so returns a list.

Arguments: porosity_model(str): string enum. See available()

CellCorner class description:

Parameter	Description	Type
c0		Vec3d
c1		Vec3d
c2		Vec3d
c3		Vec3d
c4		Vec3d
c5		Vec3d
c6		Vec3d
c7		Vec3d

rips.case.**active_cell_corners_async**(*self*, *porosity_model='MATRIX_MODEL'*)
Get a cell corners for all active cells. Async, so returns an iterator

Parameters **porosity_model** (*str*) – string enum. See available()

Returns An iterator to a chunk object containing an array of CellCorners (which is eight Vec3d values). Loop through the chunks and then the values within the chunk to get all values.

rips.case.**active_cell_property**(*self*, *property_type*, *property_name*, *time_step*, *porosity_model='MATRIX_MODEL'*)
Get a cell property for all active cells. Sync, so returns a list. For argument details, see *Result Definition*

Parameters

- **property_type** (*str*) – string enum

- **property_name** (*str*) – name of an Eclipse property
- **time_step** (*int*) – the time step for which to get the property for
- **porosity_model** (*str*) – string enum

Returns A list containing double values Loop through the chunks and then the values within the chunk to get all values.

rips.case.**active_cell_property_async**(*self*, *property_type*, *property_name*, *time_step*, *porosity_model='MATRIX_MODEL'*)

Get a cell property for all active cells. Async, so returns an iterator. For argument details, see *Result Definition*

Parameters

- **property_type** (*str*) – string enum
- **property_name** (*str*) – name of an Eclipse property
- **time_step** (*int*) – the time step for which to get the property for
- **porosity_model** (*str*) – string enum

Returns An iterator to a chunk object containing an array of double values Loop through the chunks and then the values within the chunk to get all values.

rips.case.**available_nnc_properties**(*self*)

Get a list of available NNC properties

NNCConnection class description:

Parameter	Description	Type
cell_grid_index1	Reservoir Cell Index to cell 1	int32
cell_grid_index2	Reservoir Cell Index to cell 2	int32
cell1	Reservoir Cell IJK to cell 1	Vec3i
cell2	Reservoir Cell IJK to cell 1	Vec3i

rips.case.**available_properties**(*self*, *property_type*, *porosity_model='MATRIX_MODEL'*)

Get a list of available properties

For argument details, see *Result Definition*

Parameters

- **property_type** (*str*) – string corresponding to property_type enum.
- **porosity_model** (*str*) – 'MATRIX_MODEL' or 'FRACTURE_MODEL'.

rips.case.**cell_count**(*self*, *porosity_model='MATRIX_MODEL'*)

Get a cell count object containing number of active cells and total number of cells

Parameters **porosity_model** (*str*) – String representing an enum. must be 'MATRIX_MODEL' or 'FRACTURE_MODEL'.

Returns active_cell_count: number of active cells reservoir_cell_count: total number of reservoir cells

Return type Cell Count object with the following integer attributes

CellCount class description:

Parameter	Description	Type

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```
active_cell_count       | Number of active cells     | Integer
reservoir_cell_count    | Total number of cells      | Integer
```

rips.case.**cell_info_for_active_cells**(*self*, *porosity_model='MATRIX_MODEL'*)

Get list of cell info objects for current case

Parameters **porosity_model** (*str*) – String representing an enum. must be 'MATRIX_MODEL' or 'FRACTURE_MODEL'.

Returns List of **CellInfo** objects

CellInfo class description:

```
Parameter                | Description                                  | Type
------------------------ | -------------------------------------------- | -----
grid_index               | Index to grid                                |␣
↪Integer
parent_grid_index        | Index to parent grid                         |␣
↪Integer
coarsening_box_index     | Index to coarsening box                      |␣
↪Integer
local_ijk                | Cell index in IJK directions of local grid   | Vec3i
parent_ijk               | Cell index in IJK directions of parent grid  | Vec3i
```

Vec3i class description:

```
Parameter        | Description                                | Type
---------------- | ------------------------------------------ | -----
i                | I grid index                               | Integer
j                | J grid index                               | Integer
k                | K grid index                               | Integer
```

rips.case.**cell_info_for_active_cells_async**(*self*, *porosity_model='MATRIX_MODEL'*)

Get Stream of cell info objects for current case

Parameters **porosity_model** (*str*) – String representing an enum. must be 'MATRIX_MODEL' or 'FRACTURE_MODEL'.

Returns Stream of **CellInfo** objects

See *rips.case.cell_info_for_active_cells()* for detalis on the **CellInfo** class.

rips.case.**coarsening_info**(*self*)

Get a coarsening information for all grids in the case.

Returns A list of CoarseningInfo objects with two Vec3i min and max objects for each entry.

rips.case.**create_lgr_for_completion**(*self*, *time_step*, *well_path_names*, *refinement_i*, *refinement_j*, *refinement_k*, *split_type*)

Create a local grid refinement for the completions on the given well paths

Parameters:

```
Parameter        | Description                          | Type
---------------- | ------------------------------------ | -----
time_steps       | Time step index                      | Integer
well_path_names  | List of well path names              | List of Strings
refinement_i     | Refinment in x-direction             | Integer
refinement_j     | Refinment in y-direction             | Integer
```

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refinement_k	Refinment in z-direction	Integer
split_type	Defines how to split LGRS	String enum

Enum split_type:

Option	Description
"LGR_PER_CELL"	One LGR for each completed cell
"LGR_PER_COMPLETION"	One LGR for each completion (fracture, perforation, ...)
"LGR_PER_WELL"	One LGR for each well

rips.case.**create_multiple_fractures**(*self*, *template_id*, *well_path_names*, *min_dist_from_well_td*, *max_fractures_per_well*, *top_layer*, *base_layer*, *spacing*, *action*)

Create Multiple Fractures in one go

Parameters:

Parameter	Description	Type
template_id	Id of the template	Integer
well_path_names	List of well path names	List of Strings
min_dist_from_well_td	Minimum distance from well TD	Double
max_fractures_per_well	Max number of fractures per well	Integer
top_layer	Top grid k-level for fractures	Integer
base_layer	Base grid k-level for fractures	Integer
spacing	Spacing between fractures	Double
action	'APPEND_FRACTURES' or 'REPLACE_FRACTURES'	String enum

rips.case.**create_saturation_pressure_plots**(*self*)

Create saturation pressure plots for the current case

rips.case.**create_view**(*self*)

Create a new view in the current case

Returns rips.generated.resinsight_classes.View

rips.case.**create_well_bore_stability_plot**(*self*, *well_path*, *time_step*, *parameters=None*)

Create a new well bore stability plot

Parameters

- **well_path** (*str*) – well path name
- **time_step** (*int*) – time step

Returns rips.generated.resinsight_classes.WellBoreStabilityPlot

rips.case.**days_since_start**(*self*)

Get a list of decimal values representing days since the start of the simulation

rips.case.**export_flow_characteristics**(*self*, *time_steps*, *injectors*, *producers*, *file_name*, *minimum_communication=0.0*, *aquifer_cell_threshold=0.1*)

Export Flow Characteristics data to text file in CSV format

Parameters:

```
Parameter                | Description                                          | Type
------------------------ | ---------------------------------------------------- | -----
time_steps               | Time step indices                                    | List␣
↪of Integer
injectors                | Injector names                                       | List␣
↪of Strings
producers                | Producer names                                       | List␣
↪of Strings
file_name                | Export file name                                     |␣
↪Integer
minimum_communication    | Minimum Communication, defaults to 0.0               |␣
↪Integer
aquifer_cell_threshold   | Aquifer Cell Threshold, defaults to 0.1              |␣
↪Integer
```

rips.case.**export_msw**(*self*, *well_path*)

Export Eclipse Multi-segment-well model to file

Parameters **well_path** (*str*) – Well path name

rips.case.**export_property**(*self*, *time_step*, *property_name*, *eclipse_keyword=<class 'property'>*, *undefined_value=0.0*, *export_file=<class 'property'>*)

Export an Eclipse property

Parameters

- **time_step** (*int*) – time step index
- **property_name** (*str*) – property to export
- **eclipse_keyword** (*str*) – Keyword used in export header. Defaults: value of property
- **undefined_value** (*double*) – Value to use for undefined values. Defaults to 0.0
- **export_file** (*str*) – File name for export. Defaults to the value of property parameter

rips.case.**export_snapshots_of_all_views**(*self*, *prefix=''*, *export_folder=''*)

Export snapshots for all views in the case

Parameters

- **prefix** (*str*) – Exported file name prefix
- **export_folder** (*str*) – The path to export to. By default will use the global export folder

rips.case.**export_well_path_completions**(*self*, *time_step*, *well_path_names*, *file_split*, *compdat_export='TRANSMISSIBILITIES'*, *include_perforations=True*, *include_fishbones=True*, *fishbones_exclude_main_bore=True*, *combination_mode='INDIVIDUALLY'*)

Export well path completions for the current case to file

Parameters:

```
Parameter                | Description                                          |␣
↪Type
-------------------------|| ---------------------------------------------------- | -
↪----
time_step                | Time step to export for                              |␣
↪Integer
well_path_names          | List of well path names                              |␣
↪List
```

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```
file_split                  | Controls how export data is split into files     |␣
↪String enum
compdat_export              | Compdat export type                              |␣
↪String enum
include_perforations        | Export perforations?                             |␣
↪bool
include_fishbones           | Export fishbones?                                |␣
↪bool
fishbones_exclude_main_bore | Exclude main bore when exporting fishbones?       |␣
↪bool
combination_mode            | Settings for multiple completions in same cell   |␣
↪String Enum
```

Enum file_split:

```
Option                              | Description
----------------------------------- | ------------
"UNIFIED_FILE"                      | A single file with all combined␣
↪transmissibilities
"SPLIT_ON_WELL"                     | One file for each well with combined␣
↪transmissibilities
"SPLIT_ON_WELL_AND_COMPLETION_TYPE" | One file for each completion type for each␣
↪well
```

Enum compdat_export:

```
Option                                        | Description
--------------------------------------------- | ------------
"TRANSMISSIBILITIES"                          | Direct export of transmissibilities
"WPIMULT_AND_DEFAULT_CONNECTION_FACTORS"      | Include WPIMULT in addition to␣
↪transmissibilities
```

Enum combination_mode:

```
Option              | Description
------------------- | ------------
"INDIVIDUALLY"      | Exports the different completion types into separate␣
↪sections
"COMBINED"          | Export one combined transmissibility for each cell
```

rips.case.**grid**(*self*, *index*)

Get Grid of a given index

Parameters **index** (*int*) – The grid index

Returns *rips.grid.Grid*

rips.case.**grid_property**(*self*, *property_type*, *property_name*, *time_step*, *grid_index=0*, *porosity_model='MATRIX_MODEL'*)

Get a cell property for all grid cells. Synchronous, so returns a list. For argument details, see *Result Definition*

Parameters

- **property_type** (*str*) – string enum
- **property_name** (*str*) – name of an Eclipse property
- **time_step** (*int*) – the time step for which to get the property for
- **grid_index** (*int*) – index to the grid we're getting values for

- **porosity_model** (*str*) – string enum

Returns A list of double values

rips.case.**grid_property_async**(*self*, *property_type*, *property_name*, *time_step*, *grid_index=0*, *porosity_model='MATRIX_MODEL'*)

Get a cell property for all grid cells. Async, so returns an iterator. For argument details, see *Result Definition*

Parameters

- **property_type** (*str*) – string enum
- **property_name** (*str*) – name of an Eclipse property
- **time_step** (*int*) – the time step for which to get the property for
- **gridIndex** (*int*) – index to the grid we're getting values for
- **porosity_model** (*str*) – string enum

Returns An iterator to a chunk object containing an array of double values Loop through the chunks and then the values within the chunk to get all values.

rips.case.**grids**(*self*)

Get a list of all rips Grid objects in the case

Returns List of *rips.grid.Grid*

rips.case.**import_formation_names**(*self*, *formation_files=None*)

Import formation names into project and apply it to the current case

Parameters **formation_files** (*list*) – list of files to import

rips.case.**nnc_connections**(*self*)

Get the NNC connection. Synchronous, so returns a list.

Returns A list of NNCConnection objects.

rips.case.**nnc_connections_async**(*self*)

Get the NNC connections. Async, so returns an iterator.

Returns An iterator to a chunk object containing an array NNCConnection objects. Loop through the chunks and then the connection within the chunk to get all connections.

rips.case.**nnc_connections_dynamic_values**(*self*, *property_name*, *time_step*)

Get the dynamic NNC values.

Returns A list of doubles. The order of the list matches the list from nnc_connections, i.e. the nth object of nnc_connections() refers to nth value in this list.

rips.case.**nnc_connections_dynamic_values_async**(*self*, *property_name*, *time_step*)

Get the dynamic NNC values. Async, so returns an iterator.

Returns An iterator to a chunk object containing an list of doubles. Loop through the chunks and then the values within the chunk to get values for all the connections. The order of the list matches the list from nnc_connections, i.e. the nth object of nnc_connections() refers to nth value in this list.

rips.case.**nnc_connections_generated_values**(*self*, *property_name*, *time_step*)

Get the generated NNC values.

Returns A list of doubles. The order of the list matches the list from nnc_connections, i.e. the nth object of nnc_connections() refers to nth value in this list.

rips.case.**nnc_connections_generated_values_async**(*self*, *property_name*, *time_step*)

Get the generated NNC values. Async, so returns an iterator.

Returns An iterator to a chunk object containing an list of doubles. Loop through the chunks and then the values within the chunk to get values for all the connections. The order of the list matches the list from nnc_connections, i.e. the nth object of nnc_connections() refers to nth value in this list.

rips.case.**nnc_connections_static_values**(*self*, *property_name*)
Get the static NNC values.

Returns A list of doubles. The order of the list matches the list from nnc_connections, i.e. the nth object of nnc_connections() refers to nth value in this list.

rips.case.**nnc_connections_static_values_async**(*self*, *property_name*)
Get the static NNC values. Async, so returns an iterator.

Returns An iterator to a chunk object containing an list of doubles. Loop through the chunks and then the values within the chunk to get values for all the connections. The order of the list matches the list from nnc_connections, i.e. the nth object of nnc_connections() refers to nth value in this list.

rips.case.**replace**(*self*, *new_grid_file*)
Replace the current case grid with a new grid loaded from file

Parameters **new_egrid_file** (*str*) – Path to EGRID file

rips.case.**reservoir_boundingbox**(*self*)
Get the reservoir bounding box

Returns BoundingBox

BoundingBox class description:

Type	Name
int	min_x
int	max_x
int	min_y
int	max_y
int	min_z
int	max_z

rips.case.**reservoir_depth_range**(*self*)
Get the reservoir depth range

Returns A tuple with two members. The first is the minimum depth, the second is the maximum depth

rips.case.**selected_cell_property**(*self*, *property_type*, *property_name*, *time_step*, *porosity_model='MATRIX_MODEL'*)
Get a cell property for all selected cells. Sync, so returns a list. For argument details, see *Result Definition*

Parameters

- **property_type** (*str*) – string enum
- **property_name** (*str*) – name of an Eclipse property
- **time_step** (*int*) – the time step for which to get the property for
- **porosity_model** (*str*) – string enum

Returns A list containing double values Loop through the chunks and then the values within the chunk to get all values.

rips.case.**selected_cell_property_async**(*self*, *property_type*, *property_name*, *time_step*, *porosity_model='MATRIX_MODEL'*)

Get a cell property for all selected cells. Async, so returns an iterator. For argument details, see *Result Definition*

Parameters

- **property_type** (*str*) – string enum
- **property_name** (*str*) – name of an Eclipse property
- **time_step** (*int*) – the time step for which to get the property for
- **porosity_model** (*str*) – string enum

Returns An iterator to a chunk object containing an array of double values Loop through the chunks and then the values within the chunk to get all values.

rips.case.**selected_cells**(*self*)

Get the selected cells. Synchronous, so returns a list.

Returns A list of Cells.

rips.case.**selected_cells_async**(*self*)

Get the selected cells. Async, so returns an iterator.

Returns An iterator to a chunk object containing an array of cells. Loop through the chunks and then the cells within the chunk to get all cells.

rips.case.**set_active_cell_property**(*self*, *values*, *property_type*, *property_name*, *time_step*, *porosity_model='MATRIX_MODEL'*)

Set a cell property for all active cells. For argument details, see *Result Definition*

Parameters

- **values** (*list*) – a list of double precision floating point numbers
- **property_type** (*str*) – string enum
- **property_name** (*str*) – name of an Eclipse property
- **time_step** (*int*) – the time step for which to get the property for
- **porosity_model** (*str*) – string enum

rips.case.**set_active_cell_property_async**(*self*, *values_iterator*, *property_type*, *property_name*, *time_step*, *porosity_model='MATRIX_MODEL'*)

Set cell property for all active cells Async. Takes an iterator to the input values. For argument details, see *Result Definition*

Parameters

- **values_iterator** (*iterator*) – an iterator to the properties to be set
- **property_type** (*str*) – string enum
- **property_name** (*str*) – name of an Eclipse property
- **time_step** (*int*) – the time step for which to get the property for
- **porosity_model** (*str*) – string enum

rips.case.**set_grid_property**(*self*, *values*, *property_type*, *property_name*, *time_step*, *grid_index=0*, *porosity_model='MATRIX_MODEL'*)

Set a cell property for all grid cells. For argument details, see *Result Definition*

Parameters

- **values** (*list*) – a list of double precision floating point numbers
- **property_type** (*str*) – string enum
- **property_name** (*str*) – name of an Eclipse property
- **time_step** (*int*) – the time step for which to get the property for
- **grid_index** (*int*) – index to the grid we're setting values for
- **porosity_model** (*str*) – string enum

rips.case.**set_nnc_connections_values**(*self*, *values*, *property_name*, *time_step*, *porosity_model='MATRIX_MODEL'*)

Set nnc connection values for all connections..

Parameters

- **values** (*list*) – a list of double precision floating point numbers
- **property_name** (*str*) – name of an Eclipse property
- **time_step** (*int*) – the time step for which to get the property for
- **porosity_model** (*str*) – string enum. See available()

rips.case.**simulation_wells**(*self*)

Get a list of all simulation wells for a case

Returns rips.generated.resinsight_classes.SimulationWell

rips.case.**time_steps**(*self*)

Get a list containing all time steps

The time steps are defined by the class **TimeStepDate**

TimeStepDate class description:

Type	Name
int	year
int	month
int	day
int	hour
int	minute
int	second

rips.case.**view**(*self*, *view_id*)

Get a particular view belonging to a case by providing view id

Parameters **view_id** (*int*) – view id

Returns rips.generated.resinsight_classes.View

2.3.2 rips.contour_map module

ResInsight 3d contour map module

rips.contour_map.**export_to_text**(*self*, *export_file_name=''*, *export_local_coordinates=False*, *undefined_value_label='NaN'*, *exclude_undefined_values=False*)

Export snapshot for the current view

Parameters

- **export_file_name** (*str*) – The file location to store results in.
- **export_local_coordinates** (*bool*) – Should we export local coordinates, or UTM.
- **undefined_value_label** (*str*) – Replace undefined values with this label.
- **exclude_undefined_values** (*bool*) – Skip undefined values.

2.3.3 rips.grid module

Module containing the Grid class, containing information about Case grids.

class rips.grid.**Grid**(*index*, *case*, *channel*)
Bases: object

Grid Information. Created by methods in Case *rips.case.grid() rips.case.grids()*

cell_centers()
The cell center for all cells in given grid

Returns class with double attributes x, y, x giving cell centers

Return type List of Vec3d

cell_centers_async()
The cells center for all cells in given grid async.

Returns class with double attributes x, y, x giving cell centers

Return type Iterator to a list of Vec3d

cell_corners()
The cell corners for all cells in given grid

Returns a class with Vec3d for each corner (c0, c1.., c7)

Return type list of CellCorners

cell_corners_async()
The cell corners for all cells in given grid, async.

Returns a class with Vec3d for each corner (c0, c1.., c7)

Return type iterator to a list of CellCorners

dimensions()
The dimensions in i, j, k direction

Returns class with integer attributes i, j, k giving extent in all three dimensions.

Return type Vec3i

2.3.4 rips.gridcasegroup module

Grid Case Group statistics module

rips.gridcasegroup.**compute_statistics**(*self*, *case_ids=None*)
Compute statistics for the given case ids

Parameters **case_ids** (*list of integers*) – List of case ids. If this is None all cases in group are included

rips.gridcasegroup.**create_statistics_case**(*self*)
Create a Statistics case in the Grid Case Group

Returns rips.generated.resinsight_classes.EclipseCase

rips.gridcasegroup.**statistics_cases**(*self*)
Get a list of all statistics cases in the Grid Case Group

Returns List of rips.generated.resinsight_classes.EclipseCase

rips.gridcasegroup.**view**(*self*, *view_id*)
Get a particular view belonging to a case group by providing view id :param id: view id :type id: int

Returns List of rips.generated.resinsight_classes.EclipseView

rips.gridcasegroup.**views**(*self*)
Get a list of views belonging to a grid case group

Returns List of rips.generated.resinsight_classes.EclipseView

2.3.5 rips.instance module

The main entry point for ResInsight connections The Instance class contained have static methods launch and find for creating connections to ResInsight

class rips.instance.**Instance**(*port=50051*, *launched=False*)
Bases: object

The ResInsight Instance class. Use to launch or find existing ResInsight instances

launched
Tells us whether the application was launched as a new process. If the application was launched we may need to close it when exiting the script.

Type bool

commands
Command executor. Set when creating an instance.

Type Commands

project
Current project in ResInsight. Set when creating an instance and updated when opening/closing projects.

Type *Project*

client_version_string()
Get a full version string, i.e. 2019.04.01

exit()
Tell ResInsight instance to quit

static find(*start_port=50051*, *end_port=50071*)
Search for an existing Instance of ResInsight by testing ports.

By default we search from port 50051 to 50071 or if the environment variable RESINSIGHT_GRPC_PORT is set we search RESINSIGHT_GRPC_PORT to RESINSIGHT_GRPC_PORT+20

Parameters

- **start_port** (*int*) – start searching from this port
- **end_port** (*int*) – search up to but not including this port

is_console()
Returns true if the connected ResInsight instance is a console app

is_gui()
Returns true if the connected ResInsight instance is a GUI app

static launch(*resinsight_executable=''*, *console=False*, *launch_port=-1*, *command_line_parameters=None*)
Launch a new Instance of ResInsight. This requires the environment variable RESINSIGHT_EXECUTABLE to be set or the parameter resinsight_executable to be provided. The RESINSIGHT_GRPC_PORT environment variable can be set to an alternative port number.

Parameters

- **resinsight_executable** (*str*) – Path to a valid ResInsight executable. If set will take precedence over what is provided in the RESINSIGHT_EXECUTABLE environment variable.
- **console** (*bool*) – If True, launch as console application, without GUI.
- **launch_port** (*int*) – If -1 will use the default port 50051 or RESINSIGHT_GRPC_PORT if anything else, ResInsight will try to launch with this port
- **command_line_parameters** (*list*) – Additional parameters as string entries in the list.

Returns an instance object if it worked. None if not.

Return type *Instance*

major_version()
Get an integer with the major version number

minor_version()
Get an integer with the minor version number

patch_version()
Get an integer with the patch version number

set_export_folder(*export_type*, *path*, *create_folder=False*)
Set the export folder used for all export functions

Parameters:

Parameter	Description	Type
export_type	String specifying what to export	String
path	Path to folder	String
create_folder	Create folder if it doesn't exist?	Boolean

Enum export_type:

Option	Description
"COMPLETIONS"	
"SNAPSHOTS"	
"PROPERTIES"	
"STATISTICS"	

set_main_window_size(*width*, *height*)
Set the main window size in pixels

Parameters:

Parameter	Description	Type
width	Width in pixels	Integer
height	Height in pixels	Integer

set_plot_window_size(*width*, *height*)
Set the plot window size in pixels

Parameters:

Parameter	Description	Type
width	Width in pixels	Integer
height	Height in pixels	Integer

set_start_dir(*path*)
Set current start directory

Parameters **path** (*str*) – path to directory

version_string()
Get a full version string, i.e. 2019.04.01

2.3.6 rips.pdmobject module

ResInsight caf::PdmObject connection module

class rips.pdmobject.**PdmObjectBase**(*pb2_object*, *channel*)
Bases: object

The ResInsight base class for the Project Data Model

address()
Get the unique address of the PdmObject

Returns A 64-bit unsigned integer address

ancestor(*class_definition*)
Find the first ancestor that matches the provided class_keyword :param class_definition[class]: A class definition matching the type of class wanted

channel()
Private method

children(*child_field*, *class_definition*)
Get a list of all direct project tree children inside the provided child_field :param child_field[str]: A field name

Returns A list of PdmObjects inside the child_field

copy_from(*object*)
Copy attribute values from object to self

descendants(*class_definition*)
Get a list of all project tree descendants matching the class keyword :param class_definition[class]: A class definition matching the type of class wanted

Returns A list of PdmObjects matching the class_definition

has_warnings()

pb2_object()
Private method

print_object_info()
Print the structure and data content of the PdmObject

set_value(*snake_keyword*, *value*)
Set the value associated with the provided keyword and updates ResInsight :param keyword: A string containing the parameter keyword :type keyword: str :param value: A value matching the type of the parameter.

See keyword documentation and/or print_object_info() to find the correct data type.

set_visible(*visible*)
Set the visibility of the object in the ResInsight project tree

update()
Sync all fields from the Python Object to ResInsight

visible()
Get the visibility of the object in the ResInsight project tree

warnings()

rips.pdmobject.**add_method**(*cls*)

rips.pdmobject.**add_static_method**(*cls*)

rips.pdmobject.**camel_to_snake**(*name*)

rips.pdmobject.**snake_to_camel**(*name*)

2.3.7 rips.plot module

ResInsight 2d plot module

rips.plot.**export_snapshot**(*self*, *export_folder=''*, *file_prefix=''*, *output_format='PNG'*)
Export snapshot for the current plot

Parameters

- **export_folder** (*str*) – The path to export to. By default will use the global export folder
- **prefix** (*str*) – Exported file name prefix
- **output_format** (*str*) – Enum string. Can be 'PNG' or 'PDF'.

2.3.8 rips.project module

The ResInsight project module

rips.project.**case**(*self*, *case_id*)
Get a specific grid case from the provided case Id

Parameters **id** (*int*) – case id

Returns rips.generated.resinsight_classes.Case

rips.project.**cases**(*self*)
Get a list of all grid cases in the project

Returns A list of rips.generated.resinsight_classes.Case

rips.project.**close**(*self*)
Close the current project (and open new blank project)

rips.project.**create**(*channel*)

rips.project.**create_grid_case_group**(*self*, *case_paths*)
Create a Grid Case Group from a list of cases

Parameters **case_paths** (*list*) – list of file path strings

Returns rips.generated.resinsight_classes.GridCaseGroup

rips.project.**export_multi_case_snapshots**(*self*, *grid_list_file*)
Export snapshots for a set of cases

Parameters **grid_list_file** (*str*) – Path to a file containing a list of grids to export snapshot for

rips.project.**export_snapshots**(*self*, *snapshot_type='ALL'*, *prefix=''*, *plot_format='PNG'*)
Export all snapshots of a given type

Parameters

- **snapshot_type** (*str*) – Enum string ('ALL', 'VIEWS' or 'PLOTS')
- **prefix** (*str*) – Exported file name prefix
- **plot_format** (*str*) – Enum string, 'PNG' or 'PDF'

rips.project.**export_well_paths**(*self*, *well_paths=None*, *md_step_size=5.0*)
Export a set of well paths

Parameters

- **well_paths** (*list*) – List of strings of well paths. If none, export all.
- **md_step_size** (*double*) – resolution of the exported well path

rips.project.**grid_case_group**(*self*, *group_id*)
Get a particular grid case group belonging to a project

Parameters **groupId** (*int*) – group id

Returns rips.generated.resinsight_classes.GridCaseGroup

rips.project.**grid_case_groups**(*self*)
Get a list of all grid case groups in the project

Returns List of rips.generated.resinsight_classes.GridCaseGroup

rips.project.**import_formation_names**(*self*, *formation_files=None*)
Import formation names into project

Parameters **formation_files** (*list*) – list of files to import

rips.project.**import_well_log_files**(*self*, *well_log_files=None*, *well_log_folder=''*)
Import well log files into project

Parameters

- **well_log_files** (*list*) – List of file paths to import
- **well_log_folder** (*str*) – A folder path containing files to import

Returns A list of well path names (strings) that had logs imported

rips.project.**import_well_paths**(*self*, *well_path_files=None*, *well_path_folder=''*)
Import well paths into project

Parameters

- **well_path_files** (*list*) – List of file paths to import
- **well_path_folder** (*str*) – A folder path containing files to import

Returns List of rips.generated.resinsight_classes.WellPath

rips.project.**load_case**(*self*, *path*)
Load a new grid case from the given file path

Parameters **path** (*str*) – file path to case

Returns rips.generated.resinsight_classes.Case

rips.project.**open**(*self*, *path*)
Open a new project from the given path

Parameters **path** (*str*) – path to project file

rips.project.**plot**(*self*, *view_id*)
Get a particular plot by providing view id

Parameters **view_id** (*int*) – view id

Returns rips.generated.resinsight_classes.Plot

rips.project.**plots**(*self*)
Get a list of all plots belonging to a project

Returns List of rips.generated.resinsight_classes.Plot

rips.project.**replace_source_cases**(*self*, *grid_list_file*, *case_group_id=0*)
Replace all source grid cases within a case group

Parameters

- **grid_list_file** (*str*) – path to file containing a list of cases
- **case_group_id** (*int*) – id of the case group to replace

rips.project.**save**(*self*, *path=''*)
Save the project to the existing project file, or to a new file

Parameters **path** (*str*) – File path to the file to save the project to. If empty, saves to the active project file

rips.project.**scale_fracture_template**(*self*, *template_id*, *half_length*, *height*, *d_factor*, *conductivity*)
Scale fracture template parameters

Parameters

- **template_id** (*int*) – ID of fracture template
- **half_length** (*double*) – Half Length scale factor
- **height** (*double*) – Height scale factor
- **d_factor** (*double*) – D-factor scale factor
- **conductivity** (*double*) – Conductivity scale factor

rips.project.**selected_cases**(*self*)
Get a list of all grid cases selected in the project tree

Returns A list of rips.generated.resinsight_classes.Case

rips.project.**set_fracture_containment**(*self*, *template_id*, *top_layer*, *base_layer*)
Set fracture template containment parameters

Parameters

- **template_id** (*int*) – ID of fracture template
- **top_layer** (*int*) – Top layer containment
- **base_layer** (*int*) – Base layer containment

rips.project.**summary_cases**(*self*)
Get a list of all summary cases in the Project

Returns: A list of rips.generated.resinsight_classes.SummaryCase

rips.project.**view**(*self*, *view_id*)
Get a particular view belonging to a case by providing view id

Parameters **view_id** (*int*) – view id

Returns rips.generated.resinsight_classes.View

rips.project.**views**(*self*)
Get a list of views belonging to a project

rips.project.**well_path_by_name**(*self*, *well_path_name*)
Get a specific well path by name from the project

Returns rips.generated.resinsight_classes.WellPath

rips.project.**well_paths**(*self*)
Get a list of all well paths in the project

Returns List of rips.generated.resinsight_classes.WellPath

2.3.9 rips.simulation_well module

ResInsight SimulationWell

rips.simulation_well.**case**(*self*)

rips.simulation_well.**cells**(*self*, *timestep*)
Get reservoir cells the simulation well is defined for

SimulationWellCellInfo class description:

```
Parameter    | Description                                                  |␣
↪Type
------------ | ------------------------------------------------------------ |␣
↪-----
ijk          | Cell IJK location                                            |␣
↪Vec3i
grid_index   | Grid index                                                   |␣
↪int
is_open      | True if connection to is open at the specified time step     |␣
↪bool
```

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```
branch_id    |                                                                |␣
↪int
segment_id   |                                                                |␣
↪int
```

Parameters **timestep** (*int*) – Time step index

Returns List of SimulationWellCellInfo

rips.simulation_well.**status**(*self*, *timestep*)
Get simulation well status

SimulationWellStatus class description:

```
Parameter    | Description                                                    ␣
↪   | Type
------------ | ---------------------------------------------------------------
↪- | -----
well_type    | Well type as string                                            ␣
↪   | string
is_open      | True if simulation well is open at the specified time step     ␣
↪   | bool
```

Parameters **timestep** (*int*) – Time step index

2.3.10 rips.view module

ResInsight 3d view module

rips.view.**apply_cell_result**(*self*, *result_type*, *result_variable*)
Apply a regular cell result

Parameters

- **result_type** (*str*) –

  String representing the result category. The valid values are::

  - DYNAMIC_NATIVE
  - STATIC_NATIVE
  - SOURSIMRL
  - GENERATED
  - INPUT_PROPERTY
  - FORMATION_NAMES
  - FLOW_DIAGNOSTICS
  - INJECTION_FLOODING

- **result_variable** (*str*) – String representing the result variable.

rips.view.**apply_flow_diagnostics_cell_result**(*self*, *result_variable='TOF'*, *selection_mode='FLOW_TR_BY_SELECTION'*, *injectors=None*, *producers=None*)
Apply a flow diagnostics cell result

Parameters:

Parameter	Description	Type
result_variable	String representing the result value	String
selection_mode	String specifying which tracers to select	String
injectors	List of injector names, used by 'FLOW_TR_BY_SELECTION'	String List
producers	List of injector names, used by 'FLOW_TR_BY_SELECTION'	String List

Enum compdat_export:

Option	Description
"TOF"	Time of flight
"Fraction"	Fraction
"MaxFractionTracer"	Max Fraction Tracer
"Communication"	Communication

rips.view.**case**(*self*)
Get the case the view belongs to

rips.view.**clone**(*self*)
Clone the current view

rips.view.**export_property**(*self*, *undefined_value=0.0*)
Export the current Eclipse property from the view

Parameters **undefined_value** (*double*) – Value to use for undefined values. Defaults to 0.0

rips.view.**export_sim_well_fracture_completions**(*self*, *time_step*, *simulation_well_names*, *file_split*, *compdat_export*)
Export fracture completions for simulation wells

Parameters:

Parameter	Description	Type
time_step	Time step to export for	Integer
simulation_well_names	List of simulation well names	List
file_split	Controls how export data is split into files	String enum
compdat_export	Compdat export type	String enum

Enum file_split:

Option	Description
"UNIFIED_FILE" Default Option	A single file with all transmissibilities

(continues on next page)

(continued from previous page)

```
"SPLIT_ON_WELL"                       | One file for each well transmissibilities
"SPLIT_ON_WELL_AND_COMPLETION_TYPE" | One file for each completion type for each␣
↪well
```

Enum compdat_export:

```
Option                                    | Description
------------------------------------------| ------------
"TRANSMISSIBILITIES"<b>Default Option</b>| Direct export of transmissibilities
"WPIMULT_AND_DEFAULT_CONNECTION_FACTORS" | Include export of WPIMULT
```

rips.view.**export_snapshot**(*self*, *prefix=''*, *export_folder=''*)

Export snapshot for the current view

Parameters

- **prefix** (*str*) – Exported file name prefix
- **export_folder** (*str*) – The path to export to. By default will use the global export folder

rips.view.**export_visible_cells**(*self*, *export_keyword='FLUXNUM'*, *visible_active_cells_value=1*, *hidden_active_cells_value=0*, *inactive_cells_value=0*)

Export special properties for all visible cells.

Parameters

- **export_keyword** (*string*) – The keyword to export.
- **Choices** – 'FLUXNUM' or 'MULTNUM'. Default: 'FLUXNUM'
- **visible_active_cells_value** (*int*) – Value to export forvisible active cells. Default: 1
- **hidden_active_cells_value** (*int*) – Value to export for hidden active cells. Default: 0
- **inactive_cells_value** (*int*) – Value to export for inactive cells. Default: 0

rips.view.**set_time_step**(*self*, *time_step*)

Set the time step for current view

2.3.11 rips.well_log_plot module

ResInsight Well Log Plot plot module

rips.well_log_plot.**export_data_as_ascii**(*self*, *export_folder*, *file_prefix=''*, *capitalize_file_names=False*)

Export LAS file(s) for the current plot

Parameters

- **export_folder** (*str*) – The path to export to. By default will use the global export folder
- **file_prefix** (*str*) – Exported file name prefix
- **capitalize_file_names** (*bool*) – Make all file names upper case

Returns A list of files exported

rips.well_log_plot.**export_data_as_las**(*self*, *export_folder*, *file_prefix=''*, *export_tvdrkb=False*, *capitalize_file_names=False*, *resample_interval=0.0*, *convert_to_standard_units=False*)

Export LAS file(s) for the current plot

Parameters

- **export_folder** (*str*) – The path to export to. By default will use the global export folder
- **file_prefix** (*str*) – Exported file name prefix
- **export_tvdrkb** (*bool*) – Export in TVD-RKB format
- **capitalize_file_names** (*bool*) – Make all file names upper case
- **resample_interval** (*double*) – if > 0.0 the files will be resampled

Returns A list of files exported

2.4 pdm_objects module

This module contains the classes used to wrap the autogenerated classes from **GRPC**. Usually, the script writer does not have to look here, but the documentation is included for completeness.

class rips.generated.pdm_objects.**Case**(*pb2_object=None*, *channel=None*)

Bases: rips.generated.pdm_objects.PdmObject

The ResInsight base class for Cases

file_path

Case File Name

Type str

id

Case ID

Type int

name

Case Name

Type str

class rips.generated.pdm_objects.**CellColors**(*pb2_object=None*, *channel=None*)

Bases: *rips.generated.pdm_objects.EclipseResult*

Eclipse Cell Colors class

class rips.generated.pdm_objects.**DataContainerFloat**(*pb2_object=None*, *channel=None*)

Bases: rips.generated.pdm_objects.PdmObject

values

Float Values

Type List of float

class rips.generated.pdm_objects.**DataContainerString**(*pb2_object=None*, *channel=None*)

Bases: rips.generated.pdm_objects.PdmObject

values
String Values

Type List of str

class rips.generated.pdm_objects.**DataContainerTime**(*pb2_object=None*, *channel=None*)
Bases: rips.generated.pdm_objects.PdmObject

values
Time Values

Type List of time

class rips.generated.pdm_objects.**DepthTrackPlot**(*pb2_object=None*, *channel=None*)
Bases: *rips.generated.pdm_objects.PlotWindow*

auto_scale_depth_enabled
Auto Scale

Type str

axis_title_font_size
Axis Title Font Size

Type str

axis_value_font_size
Axis Value Font Size

Type str

depth_type
Type

Type str

depth_unit
Unit

Type str

maximum_depth
Max

Type float

minimum_depth
Min

Type float

show_depth_grid_lines
Show Grid Lines

Type str

show_title_in_plot
Show Title

Type str

sub_title_font_size
Track Title Font Size

Type str

class rips.generated.pdm_objects.**EclipseCase**(*pb2_object=None*, *channel=None*)
Bases: *rips.generated.pdm_objects.Reservoir*

The Regular Eclipse Results Case

class rips.generated.pdm_objects.**EclipseContourMap**(*pb2_object=None*, *channel=None*)
Bases: *rips.generated.pdm_objects.EclipseView*

A contour map for Eclipse cases

class rips.generated.pdm_objects.**EclipseResult**(*pb2_object=None*, *channel=None*)
Bases: rips.generated.pdm_objects.PdmObject

An eclipse result definition

flow_tracer_selection_mode
Tracers

Type str

phase_selection
Phases

Type str

porosity_model_type
Porosity

Type str

result_type
Type

Type str

result_variable
Variable

Type str

selected_injector_tracers
Injector Tracers

Type List of str

selected_producer_tracers
Producer Tracers

Type List of str

selected_souring_tracers
Tracers

Type List of str

class rips.generated.pdm_objects.**EclipseView**(*pb2_object=None*, *channel=None*)
Bases: *rips.generated.pdm_objects.View*

The Eclipse 3d Reservoir View

cell_result()
Cell Result :returns: CellColors

cell_result_data()
Current Eclipse Cell Result :returns: str

set_cell_result_data(*values*)
Set Current Eclipse Cell Result :param values: data :type values: str

class rips.generated.pdm_objects.**FileSummaryCase**(*pb2_object=None*, *channel=None*)
Bases: *rips.generated.pdm_objects.SummaryCase*

A Summary Case based on SMSPEC files

include_restart_files
Include Restart Files

Type str

class rips.generated.pdm_objects.**FileWellPath**(*pb2_object=None*, *channel=None*)
Bases: *rips.generated.pdm_objects.WellPath*

Well Paths Loaded From File

class rips.generated.pdm_objects.**FractureModelPlot**(*pb2_object=None*, *channel=None*)
Bases: *rips.generated.pdm_objects.DepthTrackPlot*

A fracture model plot

class rips.generated.pdm_objects.**GeoMechCase**(*pb2_object=None*, *channel=None*)
Bases: *rips.generated.pdm_objects.Case*

The Abaqus Based GeoMech Case

views()
All GeoMech Views in the Case :returns: List of GeoMechView

class rips.generated.pdm_objects.**GeoMechContourMap**(*pb2_object=None*, *channel=None*)
Bases: *rips.generated.pdm_objects.GeoMechView*

A contour map for GeoMech cases

class rips.generated.pdm_objects.**GeoMechView**(*pb2_object=None*, *channel=None*)
Bases: *rips.generated.pdm_objects.View*

The Geomechanical 3d View

class rips.generated.pdm_objects.**GridCaseGroup**(*pb2_object=None*, *channel=None*)
Bases: rips.generated.pdm_objects.PdmObject

A statistics case group

group_id
Case Group ID

Type int

user_description
Name

Type str

class rips.generated.pdm_objects.**GridSummaryCase**(*pb2_object=None*, *channel=None*)
Bases: *rips.generated.pdm_objects.SummaryCase*

A Summary Case based on extracting grid data.

class rips.generated.pdm_objects.**ModeledWellPath**(*pb2_object=None*, *channel=None*)
Bases: *rips.generated.pdm_objects.WellPath*

A Well Path created interactively in ResInsight

class rips.generated.pdm_objects.**Plot**(*pb2_object=None*, *channel=None*)
Bases: *rips.generated.pdm_objects.PlotWindow*

The Abstract Base Class for all Plot Objects

class rips.generated.pdm_objects.**PlotWindow**(*pb2_object=None*, *channel=None*)
Bases: *rips.generated.pdm_objects.ViewWindow*

The Abstract base class for all MDI Windows in the Plot Window

id
View ID

Type int

class rips.generated.pdm_objects.**Project**(*pb2_object=None*, *channel=None*)
Bases: rips.generated.pdm_objects.PdmObject

The ResInsight Project

import_summary_case(*file_name=None*)
Import Summary Case :param file_name: :type file_name: str

Returns FileSummaryCase

summary_case(*case_id=None*)
Find Summary Case :param case_id: :type case_id: int

Returns FileSummaryCase

class rips.generated.pdm_objects.**ResampleData**(*pb2_object=None*, *channel=None*)
Bases: rips.generated.pdm_objects.PdmObject

time_steps
Time Steps

Type List of time

values
Values

Type List of float

class rips.generated.pdm_objects.**Reservoir**(*pb2_object=None*, *channel=None*)
Bases: *rips.generated.pdm_objects.Case*

Abtract base class for Eclipse Cases

views()
All Eclipse Views in the case :returns: List of EclipseView

class rips.generated.pdm_objects.**SimulationWell**(*pb2_object=None*, *channel=None*)
Bases: rips.generated.pdm_objects.PdmObject

An Eclipse Simulation Well

name
Name

Type str

class rips.generated.pdm_objects.**SummaryCase**(*pb2_object=None*, *channel=None*)
Bases: rips.generated.pdm_objects.PdmObject

The Base Class for all Summary Cases

auto_shorty_name
Use Auto Display Name

Type str

id
Case ID

Type int

short_name
Display Name

Type str

summary_header_filename
Summary Header File

Type str

available_addresses()
Arguments:

Returns DataContainerString

available_time_steps()
Arguments:

Returns DataContainerTime

resample_values(*address=None*, *resampling_period=None*)

Parameters

- **address** (*str*) – Formatted address specifying the summary vector
- **resampling_period** (*str*) – Resampling Period

Returns ResampleData

summary_vector_values(*address=None*)
Create a new Summary Plot :param address: Formatted address specifying the summary vector :type address: str

Returns DataContainerFloat

class rips.generated.pdm_objects.**SummaryCaseSubCollection**(*pb2_object=None*, *channel=None*)
Bases: rips.generated.pdm_objects.PdmObject

id
Ensemble ID

Type int

is_ensemble
Is Ensemble

Type str

name_count
Name

Type str

summary_collection_name
Name

Type str

class rips.generated.pdm_objects.**SummaryPlot**(*pb2_object=None*, *channel=None*)
Bases: *rips.generated.pdm_objects.Plot*

A Summary Plot

is_using_auto_name
Auto Title

Type str

normalize_curve_y_values
Normalize all curves

Type str

plot_description
Name

Type str

show_plot_title
Plot Title

Type str

class rips.generated.pdm_objects.**View**(*pb2_object=None*, *channel=None*)
Bases: *rips.generated.pdm_objects.ViewWindow*

background_color
Background

Type str

current_time_step
Current Time Step

Type int

disable_lighting
Disable Results Lighting

Type str

grid_z_scale
Z Scale

Type float

id
View ID

Type int

perspective_projection
Perspective Projection

Type str

show_grid_box
Show Grid Box

Type str

show_z_scale
Show Z Scale Label

Type str

class rips.generated.pdm_objects.**ViewWindow**(*pb2_object=None*, *channel=None*)
Bases: rips.generated.pdm_objects.PdmObject

The Base Class for all Views and Plots in ResInsight

class rips.generated.pdm_objects.**WbsParameters**(*pb2_object=None*, *channel=None*)
Bases: rips.generated.pdm_objects.PdmObject

df_source
Depletion Factor (DF)

Type str

fg_multiplier
SH Multiplier for FG in Shale

Type float

fg_shale_source
FG in Shale Calculation

Type str

k0_fg_source
K0_FG

Type str

k0_sh_source
K0_SH

Type str

obg0_source
Initial Overburden Gradient

Type str

poission_ratio_source
Poisson Ratio

Type str

pore_pressure_non_reservoir_source
Non-Reservoir Pore Pressure

Type str

pore_pressure_reservoir_source
Reservoir Pore Pressure

Type str

ucs_source
Uniaxial Compressive Strength

Type str

user_df
User Defined DF

Type float

user_k0_fg
User Defined K0_FG

Type float

user_k0_sh
User Defined K0_SH

Type float

user_poisson_ratio
User Defined Poisson Ratio

Type float

user_pp_non_reservoir
Multiplier of hydrostatic PP

Type float

user_ucs
User Defined UCS [bar]

Type float

water_density
Density of Sea Water [g/cm^3]

Type float

class rips.generated.pdm_objects.**WellBoreStabilityPlot**(*pb2_object=None*, *channel=None*)
Bases: *rips.generated.pdm_objects.WellLogPlot*

A GeoMechanical Well Bore Stabilit Plot

parameters()
Well Bore Stability Parameters :returns: WbsParameters

class rips.generated.pdm_objects.**WellLogPlot**(*pb2_object=None*, *channel=None*)
Bases: *rips.generated.pdm_objects.DepthTrackPlot*

A Well Log Plot With a shared Depth Axis and Multiple Tracks

class rips.generated.pdm_objects.**WellPath**(*pb2_object=None*, *channel=None*)
Bases: rips.generated.pdm_objects.PdmObject

The Base class for Well Paths

name
Name

Type str

generated.**pdm_objects = <module 'rips.generated.pdm_objects' from '/home/docs/checkouts/rea**

2.5 Command

As the Python interface is growing release by release, we are investigating how to automate the building of reference documentation. This document is not complete, but will improve as the automation moves forward.

2.5.1 Currently missing features

- Description of enums

- Description of return values/classes
- Description of each object ## clone_view

Parameter	Type	Description
view_id	int	View Id

2.5.2 close_project

2.5.3 compute_case_group_statistics

Parameter	Type	Description
case_group_id	int	Case Group ID
case_ids	List of str	Case IDs

2.5.4 create_grid_case_group

Parameter	Type	Description
case_paths	List of str	List of Paths to Case Files

2.5.5 create_lgr_for_completions

Parameter	Type	Description
case_id	int	Case ID
time_step	int	Time Step Index
well_path_names	List of str	Well Path Names
refinement_i	int	RefinementI
refinement_j	int	RefinementJ
refinement_k	int	RefinementK
split_type	str	SplitType

2.5.6 create_multi_plot

Parameter	Type	Description
plots	List of str	Plots

2.5.7 create_multiple_fractures

Parameter	Type	Description
case_id	int	Case ID
well_path_names	List of str	Well Path Names
min_dist_from_well_td	float	Min Distance From Well TD
max_fractures_per_well	int	Max Fractures per Well
template_id	int	Template ID
top_layer	int	Top Layer
base_layer	int	Base Layer
spacing	float	Spacing
action	str	Action

2.5.8 create_saturation_pressure_plots

Parameter	Type	Description
case_ids	List of str	Case IDs

2.5.9 create_statistics_case

Parameter	Type	Description
case_group_id	int	Case Group Id

2.5.10 create_view

Parameter	Type	Description
case_id	int	Case Id

2.5.11 create_well_bore_stability_plot

Parameter	Type	Description
case_id	int	GeoMech Case Id
well_path	str	Well Path
time_step	int	Time Step
wbs_parameters	str	WbsParameters

2.5.12 export_contour_map_to_text

Parameter	Type	Description
export_file_name	str	
export_local_coordinates	str	
undefined_value_label	str	
exclude_undefined_values	str	
view_id	int	View Id

2.5.13 export_flow_characteristics

Parameter	Type	Description
case_id	int	Case ID
time_steps	List of str	Selected Time Steps
injectors	List of str	Injectors
producers	List of str	Producers
file_name	str	Export File Name
minimum_communication	float	Minimum Communication
aquifer_cell_threshold	float	Aquifer Cell Threshold

2.5.14 export_lgr_for_completions

Parameter	Type	Description
case_id	int	Case ID
time_step	int	Time Step Index
well_path_names	List of str	Well Path Names
refinement_i	int	RefinementI
refinement_j	int	RefinementJ
refinement_k	int	RefinementK
split_type	str	SplitType

2.5.15 export_msw

Parameter	Type	Description
case_id	int	Case ID
well_path	str	Well Path Name
include_perforations	str	Include Perforations
include_fishbones	str	Include Fishbones
include_fractures	str	Include Fractures
file_split	str	File Split

2.5.16 export_multi_case_snapshots

Parameter	Type	Description
grid_list_file	str	Grid List File

2.5.17 export_property

Parameter	Type	Description
case_id	int	Case ID
time_step	int	Time Step Index
property	str	Property Name
eclipse_keyword	str	Eclipse Keyword
undefined_value	float	Undefined Value
export_file	str	Export FileName

2.5.18 export_property_in_views

Parameter	Type	Description
case_id	int	Case ID
view_ids	List of str	View IDs
view_names	List of str	View Names
undefined_value	float	Undefined Value

2.5.19 export_sim_well_fracture_completions

Parameter	Type	Description
case_id	int	Case ID
view_id	int	View ID
view_name	str	View Name
time_step	int	Time Step Index
simulation_well_names	List of str	Simulation Well Names
file_split	str	File Split
compdat_export	str	Compdat Export

2.5.20 export_snapshots

Parameter	Type	Description
type	str	Type
prefix	str	Prefix
case_id	int	Case Id
view_id	int	View Id
export_folder	str	Export Folder
plot_output_format	str	Output Format

2.5.21 export_visible_cells

Parameter	Type	Description
case_id	int	Case ID
view_id	int	View ID
view_name	str	View Name
export_keyword	str	Export Keyword
visible_active_cells_value	int	Visible Active Cells Value
hidden_active_cells_value	int	Hidden Active Cells Value
inactive_cells_value	int	Inactive Cells Value

2.5.22 export_well_log_plot_data

Parameter	Type	Description
export_format	str	
view_id	int	
export_folder	str	
file_prefix	str	
export_tvd_rkb	str	
capitalize_file_names	str	
resample_interval	float	
convert_curve_units	str	

2.5.23 export_well_path_completions

Parameter	Type	Description
case_id	int	Case ID
time_step	int	Time Step Index
well_path_names	List of str	Well Path Names
file_split	str	File Split
compdat_export	str	Compdat Export
combination_mode	str	Combination Mode
use_ntg_horizontally	str	Use NTG Horizontally
include_perforations	str	Include Perforations
include_fishbones	str	Include Fishbones
include_fractures	str	Include Fractures
exclude_main_bore_for_fishbones	str	Exclude Main Bore for Fishbones
perform_trans_scaling	str	Perform Transmissibility Scaling
trans_scaling_time_step	int	Transmissibility Scaling Pressure Time Step
trans_scaling_wbhp_from_summary	str	Transmissibility Scaling WBHP from summary
trans_scaling_wbhp	float	Transmissibility Scaling Constant WBHP Value

2.5.24 export_well_paths

Parameter	Type	Description
well_path_names	List of str	Well Path Names
md_step_size	float	MD Step Size

2.5.25 import_formation_names

Parameter	Type	Description
formation_files	List of str	
apply_to_case_id	int	

2.5.26 import_well_log_files

Parameter	Type	Description
well_log_folder	str	
well_log_files	List of str	

2.5.27 import_well_paths

Parameter	Type	Description
well_path_folder	str	
well_path_files	List of str	

2.5.28 load_case

Parameter	Type	Description
path	str	Path to Case File

2.5.29 open_project

Parameter	Type	Description
path	str	Path

2.5.30 replace_case

Parameter	Type	Description
case_id	int	Case ID
new_grid_file	str	New Grid File

2.5.31 replace_multiple_cases

2.5.32 replace_source_cases

Parameter	Type	Description
case_group_id	int	Case Group ID
grid_list_file	str	Grid List File

2.5.33 run_octave_script

Parameter	Type	Description
path	str	Path
case_ids	List of str	Case IDs

2.5.34 save_project

Parameter	Type	Description
file_path	str	

2.5.35 save_project_as

Parameter	Type	Description
file_path	str	

2.5.36 scale_fracture_template

Parameter	Type	Description
id	int	Id
half_length	float	HalfLengthScaleFactor
height	float	HeightScaleFactor
d_factor	float	DFactorScaleFactor
conductivity	float	ConductivityScaleFactor
width	float	WidthScaleFactor

2.5.37 set_export_folder

Parameter	Type	Description
type	str	Type
path	str	Path
create_folder	str	Create Folder

2.5.38 set_fracture_containment

Parameter	Type	Description
id	int	Id
top_layer	int	TopLayer
base_layer	int	BaseLayer

2.5.39 set_main_window_size

Parameter	Type	Description
height	int	Height
width	int	Width

2.5.40 set_plot_window_size

Parameter	Type	Description
height	int	Height
width	int	Width

2.5.41 set_start_dir

Parameter	Type	Description
path	str	Path

2.5.42 set_time_step

Parameter	Type	Description
case_id	int	Case ID
view_id	int	View ID
time_step	int	Time Step Index

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