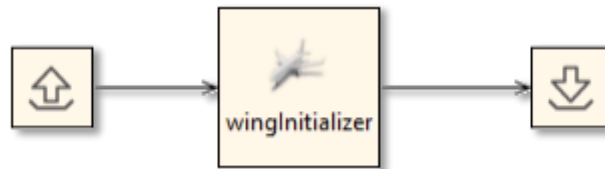


RCE tool integration

wingInitializer



Choose Tool Configuration

Create a new tool configuration or choose an inactive one to activate

- ☒ Create a new Common tool configuration
- ☐ Create a new CPACS tool configuration
- ☐ Create a new tool configuration from a template

CPACS Tool (Type: CPACS)
CPACS Tool with incoming and return directory (Type: CPACS)
CPACS Tool with return directory (Type: CPACS)

(1) In this example we use the "common tool configuration".

- ☐ Choose an inactive tool configuration to edit:

Selected tool configuration:

(2) Click "Next >"



< Back

Next >

Save As ...

Save and activate

Cancel

Tool Description

Define some information for the tool

Tool characteristics

Name*: wingInitializer

Icon path: logo.png



☒ Copy into configuration folder

Group Path: CPACS_demo



Documentation: toolIntegrationSettings.pdf



Description:

This tool demonstrates:

- how to initialize a CPACS wing
- how to make use of toolspecific data

(1) Provide you tool name

(2) Choose a pretty icon

(3) Your tool palette might be structured by groups:

- ▼ User Integrated Tools
 - ▼ CPACS_demo
 - ✎ wingInitializer

(4) Link a documentation

(5) Add description

(6) Provide contact information

(7) Next >



< Back

Next >

Save As ...

Save and update

Cancel

Inputs and Outputs

Configure the inputs and outputs of the tool


Inputs Outputs Verification

Input	Data type	Handling	Constraint
CPACS_in	File	Single (consumed), Queu...	Required

Add...

Edit...

Remove

 Edit... Input

Name*: CPACS_in

Data type*: File

Handling*:
☐ Constant (not consumed)
☒ Single (consumed)
☒ Queue (consumed)

Default handling*: Queue (consumed)

Constraint*:
☒ Required
☐ Required if connected
☐ Not required

Default constraint*: Required

OK Cancel

(1) Click "Add"

(2) Define RCE input variable of type "File"

(3) Choose these file handling settings and click "OK"

(4) Next >



< Back

Next >

Save As ...

Save and update

Cancel

Inputs and Outputs

Configure the inputs and outputs of the tool

Inputs Outputs Verification

Output

CPACS_out


Data type

File

Add...

Edit...

Remove

 Edit... Output

Name*:

Data type*:

OK Cancel

(1) Click "Add"

(2) Define RCE output variable of type "File"

(3) Next >



< Back

Next >

Save As ...

Save and update

Cancel

Tool Properties

Define properties of the tool

Property groups:

Default

Add...

Rename...

Remove

Property keys for group "Default":

Key	Display name	Define at wo...	Default va...	Comment

Add...

Edit...

Remove

Nothing to do ...

☐ Write key-value properties file at runtime (in "Config" folder)

working/Config/

(1) Next >



< Back

Next >

Save As ...

Save and update

Cancel

Integrate a Tool as a Workflow Component

Launch Settings

⚠ Currently, only one launch setting is possible

Host	Tool directory	Version	Working directory
RCE	C:\Workspace\Entwicklun...	1.0	RCE temp directory

Add... Edit...

Edit Launch Settings

Tool directory*: C:\Workspace\Entwicklung\CPACS\CPACS_Seminar\ToolIntegration ...

Version*: 1.0

Working directory (absolute): ...

☒ Create arbitrary directory in RCE temp directory

☐ Limit parallel executions

OK Cancel

☐ Use a new working directory on each run

Tool Copying Behaviour

☐ Do not copy tool

☒ Copy tool to working directory once

☐ Copy tool to working directory on each run

Clean up choices for working directory(ies) in workflow configuration*

☐ Never delete working directory(ies)

☒ Delete working directory(ies) when workflow is finished

☒ Keep in case of failed workflow run

☐ Delete working directory(ies) after each run of the tool

☐ Keep in case of failed tool run

*Defines the user's choices when configuring the component

? < Back Next > Save As ... Save and update Cancel

(1) Add launch setting

(2) Point to tool directory

(3) Select tool version

(4) Select checkboxes like this


(5) Select your preferred copying behavior

(6) Convenient for debugging...


(7) Next >

```
C:\ProgramData\mambaforge\Scripts\activate.bat  
cpacsSeminar  
python "${dir:tool}"\run.py
```

(1) Specify execution commands for Windows and/or Linux

 This example is written in Python, so we need to activate the correct interpreter first.

(2) Select “Working directory”

 Integrate a Tool as a Workflow Component

Execution

Configure the execution command and optionally a pre execution, post execution, and tool run imitation script

Execution command(s)	Pre execution script	Post execution script	Tool run imitation script
<input checked="" type="checkbox"/> Command(s) for Windows <div>1 C:\ProgramData\mambaforge\Scripts\activate.bat cpacsSeminar 2 python "\${dir:tool}"\run.py 3</div>	<input type="checkbox"/> Command(s) for Linux <div>1</div>		

Inputs
CPACS_in ▼ Insert

Properties
▼ Insert

Directories
Config dir ▼ Insert

Note: Command(s) executed as batch file Note: Command language is Bash

Execution Options

☐ Exit code other than 0 is not an error


Execute (command(s), pre execution/post execution/tool run imitation script) from

☒ Working directory

☐ Tool directory

Tool run imitation mode

☐ Support tool run imitation

 < Back Next > Save As ... Save and update Cancel


```
# Create folder structure, if not already existing

cpacsIOName = "cpacsIO" # CPACS input/output
toolIOName = "toolIO" # Additional tool input/output

for dirName in [cpacsIOName,toolIOName]:
    try:
        os.mkdir(os.path.join("${dir:working}", dirName))
    except:
        print("An exception occurred")

# Copy CPACS input from RCE to tool input directory:

fileName = "CPACS_in.xml"

inputDir = os.path.join("${dir:working}", cpacsIOName)
shutil.copyfile("${in:CPACS_in}", os.path.join(inputDir,
fileName))
```

(1) Insert pre-execution script in Python

i Pre-execution: What happens before the actual tool is activated. Use this to create the required folder structure, if necessary, and copy the input file into it.

Integrate a Tool as a Workflow Component

Execution

Configure the execution command and optionally a pre execution, post execution, and tool run imitation script

Execution command(s)	Pre execution script	Post execution script	Tool run imitation script
	<pre> 1 # Create folder structure, if not already existing 2 3 cpacsIOName = "cpacsIO" # CPACS input/output 4 toolIOName = "toolIO" # Additional tool input/output 5 6 for dirName in [cpacsIOName,toolIOName]: 7 try: 8 os.mkdir(os.path.join("\${dir:working}", dirName)) 9 except: 10 print("An exception occurred") 11 12 13 # Copy CPACS input from RCE to tool input directory: 14 fileName = "CPACS_in.xml" 15 16 inputDir = os.path.join("\${dir:working}", cpacsIOName) 17 shutil.copyfile("\${in:CPACS_in}", os.path.join(inputDir, 18 fileName)) 19 </pre>		

Inputs

CPACS_in

Outputs

CPACS_out

Properties

Directories

Config dir


Note: Script language is embedded Python 2.5 (plain Python without specific modules)

Tool run imitation mode


☐ Support tool run imitation

```
dirName = "cpacsIO"  
fileName = "CPACS_out.xml"
```

```
${out:CPACS_out} = os.path.join("${dir:working}",  
dirName, fileName)
```

 **Post-execution:** What happens after the actual tool has finished. Here we're telling RCE where to find the output file.

(1) Insert post-execution script in Python

 Integrate a Tool as a Workflow Component

Execution

Configure the execution command and optionally a pre execution, post execution, and tool run imitation script

Execution command(s)

Pre execution script

Post execution script

Tool run imitation script

```
1 dirName = "cpacsIO"  
2 fileName = "CPACS_out.xml"  
3  
4 ${out:CPACS_out} = os.path.join("${dir:working}", dirName,  
5 fileName)  
5 |
```

Inputs

CPACS_in ▼ Insert

Outputs

CPACS_out ▼ Insert

Properties

▼ Insert

Directories

Config dir ▼ Insert

Additional Properties


Tool exit code ▼ Insert

Insert copy of file/dir...

Note: Script language is embedded Python 2.5 (plain Python without specific modules)

Tool run imitation mode

☐ Support tool run imitation



< Back

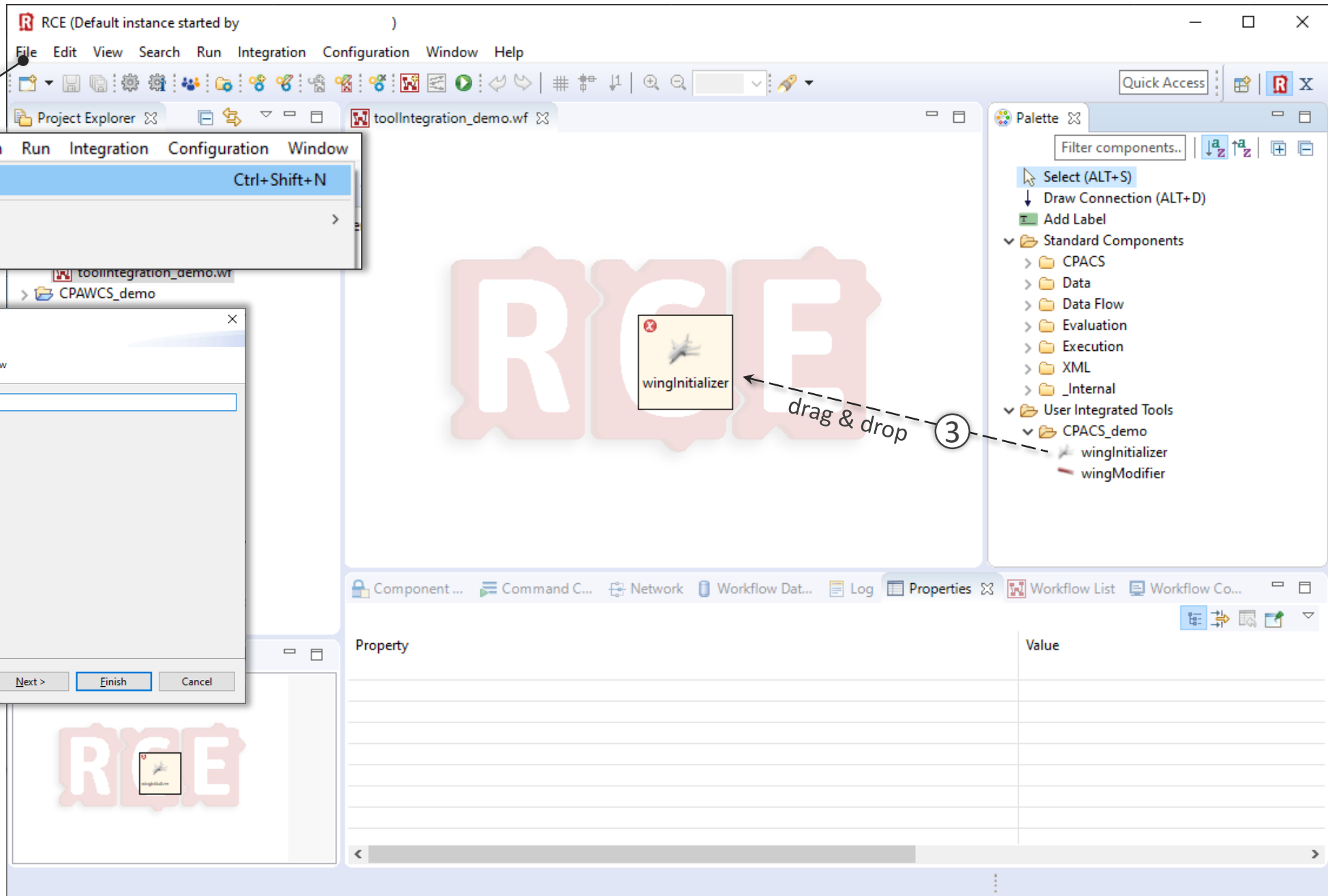
Next >

Save As ...

Save and update

Cancel

(2) "Save and update/activate"



RCE (Default instance started by)

File Edit View Search Run Integration Configuration Window Help

*toolIntegration_demo.wf

drag & drop

1

2

6

6.1

6.2

6.3

6.4

OK Cancel

Component Properties: Input Provider

Outputs

Name	Data type	Value

Add... Edit... Remove

Quick Access

Filter components

- Select (ALT+S)
- Draw Connection (ALT+D)
- Add Label
- Standard Components
 - CPACS
 - Data
 - Data Flow
 - Input Provider
 - Joiner
 - Output Writer
 - Switch
 - Evaluation
 - Execution
 - XML
 - _Internal
 - User Integrated Tools

Add Output

Name: input 6.1

Data type: File 6.2

Configuration

Value: CPACS_dummies/workflowInput/wf_input.xml 6.3

☐ Define at workflow start

Select from project... Select from file system...

6

(3) Select Input provider

(4) Select "Properties"

(5) Select "Add"

RCE (Default instance started by)

File Edit View Search Run Integration Configuration Window Help

*toolIntegration_demo.wf

(1) Select Output provider

wingInitializer

(2) Select "Properties"

Component Publishing Command Console Network Workflow Data Browser Log Properties 4

Component Properties: Output Writer

Root Location Inputs Data Sheet

Name	Data type	Handling	Constraint	Target file/directory	Target folder

Add... Edit... Remove

(3) Select "Add"

Edit Input

Name: output 4.1

Data type: File

Handling: Queue (consumed)

Constraint: Required

Configuration

Options

Target file/directory output_[Timestamp] 4.2

[Component name] Insert


Target folder: [root]\results 4.3

Sub folder:

Note: Currently, only one sub folder is allowed.

[Component name] Insert

OK Cancel

 *Ctrl+S* to remove red error-indicators

RCE (Default instance started by)

File Edit View Search Run Integration Configuration Window Help

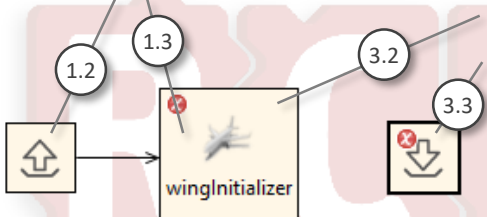
*toolIntegration_demo.wf

Palette Filter components..

- Select (ALT+S)
- Draw Connection (ALT+D)
- Add Label
- Standard Components
- User Integrated Tools

(1) Draw connection between input provider and tool

(3) Draw connection between input provider and tool



1.2 1.3 3.2 3.3

wingInitializer

Connection Editor

Source	Connections	Target
Input Provider		wingInitializer
input		CPACS_in

Note: One or more connections have been drawn automatically. Click OK to apply.

Cancel OK

2

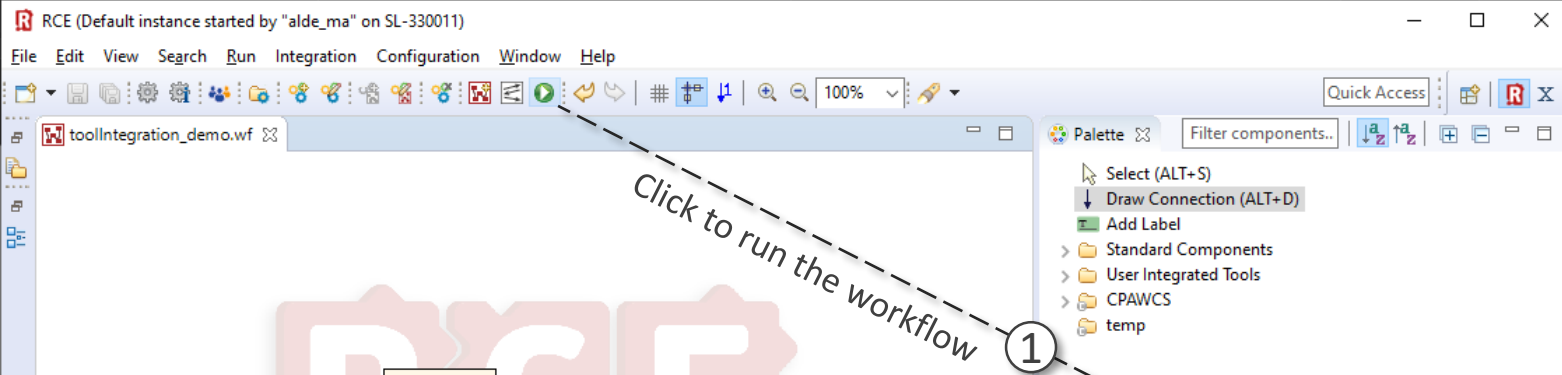
Connection Editor

Source	Connections	Target
wingInitializer		Output Writer
CPACS_out		output

Note: One or more connections have been drawn automatically. Click OK to apply.

Cancel OK

4



Component Publishing Command Console Network Workflow Data Browser Log Properties

Component Properties: Output Writer

Root Location

Inputs

Name	Data type	Handling	Constraint
output	File	Queue (consumed)	Required

Data Sheet

RCE (Default instance started by "alde_ma" on SL-330011)

File Edit View Search Run Integration Configuration Window Help

toolIntegration_demo.wf toolIntegration_demo_2023-06-01_09:59:31_03: Finished

Palette Filter components..

- Select (ALT+S)
- Draw Connection (ALT+D)
- Add Label
- Standard Components
- User Integrated Tools
- CPAWCS
- temp

Component Publishing Command Console Network Workflow Data Browser Log Properties Workflow List Workflow Console

[All Workflows] [All Components] search in messages Reset Search

Message Types: ☒ Workflow/Component ☒ Tool out ☒ Tool error

Type	Time	Message	Component	Workflow
Tool	2023-06-01 09:...	***** Welcome to Initializer *****	wingIni...	toolIntegration_demo_2023-06-
Tool	2023-06-01 09:...	TIXI version: 3.3.0	wingIni...	toolIntegration_demo_2023-06-
Tool	2023-06-01 09:...	Start reading CPACS file...	wingIni...	toolIntegration_demo_2023-06-
Tool	2023-06-01 09:...	3.0	wingIni...	toolIntegration_demo_2023-06-
Co...	2023-06-01 09:...	Command(s) executed - exit code: 0	wingIni...	toolIntegration_demo_2023-06-

RCE (Default instance started by "alde_ma" on SL-330011)

File Edit Search Run Integration Configuration Design Window Help

toolIntegration_demo.wf toolIntegration_demo_2023-06-01_09:59:31_03: Finished CPACS_out.xml

Node	Content
xml	version="1.0" encoding="utf-8"
cpacs	
xmlns:xsi	http://www.w3.org/2001/XMLSchema-instance
xmlns:in	http://www.cpacs.de/wingInitializer
xsi:noNamespaceSchemaLocation	../schemaFiles/cpacs_schema.xsd
xsi:schemaLocation	http://www.cpacs.de/wingInitializer ../schemaFiles/toolspecific_wingInitialize...
header	
toolspecific	
vehicles	

Design Source

Component Publishing Command Console Network Workflow Data Browser Log Properties Workflow List Workflow Console

toolIntegration_demo_2023-06-01_09:59:31_03 <local>

- [no error log]
- Run Information
- Timeline
 - wingInitializer - Tear down (2023-06-01 09:59:45) <local>
 - Output Writer - Run 1 (2023-06-01 09:59:45) <local>
 - Host instance: Default instance started by "alde_ma" on SL-330011
 - Inputs
 - output: CPACS_out.xml
 - Execution Log
 - wingInitializer - Run 1 (2023-06-01 09:59:41) <local>
 - wingInitializer - Init (2023-06-01 09:59:41) <local>
 - Input Provider - Run 1 (2023-06-01 09:59:41) <local>
- Timeline by Component

Palette

Filter components...

- Select (ALT+S)
- Draw Connection (ALT+D)
- Add Label
- Standard Components
- User Integrated Tools
- CPAWCS
- temp

(2) Refresh

(1) Select Workflow Data Browser

(3) Inspect input to the Output Writer