

Reservoir Simulation Interface

SKUA[®] 2009.4 and GOCAD[®] 2009.4

Rock & Fluid Canvas[™] 2009 | Epos[®] 4.0 Rollup 3



Configuration Guide

© 2007–2011 Paradigm Ltd. or its affiliates and subsidiaries. All rights reserved.

The information in this document is subject to change without notice and should not be construed as a commitment by Paradigm Ltd. or its affiliates and subsidiaries (collectively, "Paradigm"). Paradigm assumes no responsibility for any errors that may appear in this document.

The Copyright Act of the United States, Title 17 of the United States Code, Section 501 prohibits the reproduction or transmission of Paradigm's copyrighted material in any form or by any means, electronic or mechanical, including photocopying and recording, or by any information storage and retrieval system without permission in writing from Paradigm. Violators of this statute will be subject to civil and possible criminal liability. The infringing activity will be enjoined and the infringing articles will be impounded. Violators will be personally liable for Paradigm's actual damages and any additional profits of the infringer, or statutory damages in the amount of up to \$150,000 per infringement. Paradigm will also seek all costs and attorney fees. In addition, any person who infringes this copyright willfully and for the purpose of commercial advantage or private financial gain, or by the reproduction or distribution of one or more copies of a copyrighted work with a total retail value of over \$1,000 shall be punished under the criminal laws of the United States of America, including fines and possible imprisonment.

The following are trademarks or registered trademarks of Paradigm Ltd. or its affiliates and subsidiaries (collectively, "Paradigm") in the United States or in other countries: Paradigm, Paradigm logo, and/or other Paradigm products referenced herein. For a complete list of Paradigm trademarks, visit our Web site at www.pdgm.com. All other company or product names are the trademarks or registered trademarks of their respective holders.

Alea and Jacta software under license from TOTAL. All rights reserved.

Some components or processes may be licensed under one or more of U.S. Patent Numbers 5,570,106; 5,615,171; 6,765,570; and 6,690,820.

Some components or processes are patented by Paradigm and/or one or more of its affiliates under U.S. Patent Numbers 5,629,904; 6,430,508; 6,819,628; 6,820,043; 6,859,734; 6,873,913; 7,095,677; 7,123,258; 7,295,929; 7,295,930; 7,328,139; 7,561,922; and 7,584,056. In addition, there may be patent protection in other foreign jurisdictions for these and other Paradigm products.

All rights not expressly granted are reserved.

Third-party software notices are located at www.pdgm.com/thirdparty/.

Configuring Reservoir Simulation Interface

If you have a Reservoir Simulation Interface license and you want to launch flow simulations from Paradigm™ SKUA® 2009.4 or Paradigm™ GOCAD® 2009.4, you or an Information Technology administrator need to configure simulator launch parameters for Reservoir Simulation Interface based on:

- The simulator you want to use (ECLIPSE, 3DSL, or another flow simulator)¹
- The local operating system (Windows, Linux, or both)
- The mechanism through which the simulator executable is accessed (locally via the command line, remotely via a remote shell (RSH) on another host, or through a Web portal by specifying a Web address)

You also need to edit the default configuration template, default_run_config.xml, which resides in the following location, and rename (or copy) the file as "run_config.xml" in the same location:

InstallationPath\PDGM\GOCAD-SKUA-2009.4\ReservoirProduction\lib\app-defaults\

Modifying this template may require the assistance of your site system engineer or a Paradigm consultant. The configuration file can contain information relating to multiple simulators, operating systems, or launch mechanisms.

You or an Information Technology administrator can also incorporate custom modifications to the launch panel by defining a user interface (UI) component that allows you to enter or select custom launch parameters directly from the Reservoir Simulation Interface Workflow, rather than storing them in the configuration file. You can even set your own default parameters for this UI component.

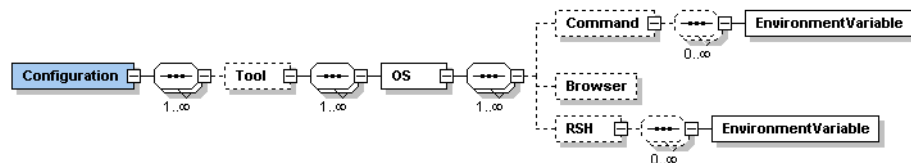
For more information, see:

- "Configuration File Format," page 1
- "Launching Simulations for Other Flow Simulators," page 2
- "Configuration File Example," page 3
- "Customizing the User Interface," page 5
- "Predefined String Variables," page 5

Configuration File Format

Figure 1 shows the hierarchy of elements that make up the configuration file.

Figure 1 Hierarchy of elements in the configuration file



1. The Reservoir Simulation Interface Workflow supports configuring and launching ECLIPSE and 3DSL simulations. However, you can also start flow simulations with other simulators by using your own simulation parameter file. For more information, see "Launching Simulations for Other Flow Simulators" on page 2.

Below the mandatory **Configuration** description, you need to specify the following elements (bold text corresponds to the labels in [Figure 1 on page 1](#); italicized text corresponds to words in the example configuration file in [Figure 2 on page 3](#)):

- **Tool.** Specifies the *name* of the simulator, that is, "3DSL" or "ECLIPSE."
- **OS.** Specifies the *type* of operating system for which the launch mechanism description that follows will be valid, that is, "Windows," "Linux," or "All."

Afterward, you need to specify one of the following launch mechanisms:

- **Command.** Specifies launching the executable through a command line.
- **Browser.** Specifies a Web address for submitting the job.
- **RSH.** Specifies remotely logging on to another computer to launch the simulation.

For the chosen launch mechanism, specify the following components:

- **description.** A unique name given to a particular launch configuration that will appear on the launch panel in Reservoir Simulation Interface.
- **value.** An instruction executed at launch (see [Table 1](#)).
- **uicomponent.** (Optional) The location of the .ui file that contains your custom UI component for entering parameters (see "[Customizing the User Interface](#)" on [page 5](#)).

You also need to specify environment variables (for example, the location of the license file) before you launch the simulation. Specify these variables as **EnvironmentVariable**, including the following components:

- *name.* The name of environment variable.
- *value.* The corresponding value.

Table 1 Instruction executed for each launch mechanism

Launch mechanism	Launches
Command	The <i>value</i> attribute which should be the path to the simulator executable and the parameter file
Browser	The local default browser with the Web address specified in the <i>value</i> attribute
RSH	The RSH command with the parameters described in the value attribute

Launching Simulations for Other Flow Simulators

Though you can select only the ECLIPSE and 3DSL simulators in the Reservoir Simulation Interface Workflow, you can also bypass the configuration steps and launch a simulation with another simulator (such as IMEX from CMG) by providing a complete simulation parameter file. To do this, you need to specify that the **Tool** name is either "ECLIPSE" or "3DSL" in the configuration file (run_config.xml), and then specify any simulator (for example, IMEX) as the **Value** in the execution command.

Configuration File Example

Figure 2 shows an example configuration file, run_config.xml.

Figure 2 Example configuration file

```
<?xml version="1.0" encoding="UTF-8" ?>
- <Configuration xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:noNamespaceSchemaLocation="Configuration.xsd">
  <!-- Sample configuration for job submission -->
  - <Tool name="3DSL">
    - <OS type="Win32">
      - <Command description="3DSL 2.20" value="C:\Users\Jack\EarthDecision\3dsl-pc-060705.exe
        "$PARAMETER_FILE">
        <EnvironmentVariable name="LSFORCEHOST" value="ODEON" />
      </Command>
      - <Command description="Show Env. Variables" uicomponent="default_custom_form.ui" value="cmd /C
        echo $PARAMETER_FILE () $PARAMETER_FILE_WO_EXT () $UI.input_1 () %USERNAME%">
        <EnvironmentVariable name="LSFORCEHOST" value="ODEON" />
      </Command>
      - <Command description="3DSL 2.40 (for testing only)" value="C:\Users\Jack\EarthDecision\3dsl-pc-
        060705.exe "$PARAMETER_FILE">
        <EnvironmentVariable name="LSFORCEHOST" value="ODEON" />
      </Command>
    </OS>
    - <OS type="linux-i86">
      - <Command description="Launch local" value="/apps/3dsl/bin/3dsl $PARAMETER_FILE">
        <EnvironmentVariable name="LSFORCEHOST" value="odeon" />
      </Command>
    </OS>
    - <OS type="All">
      <Browser description="Launch browser" value="http://portal.fr/3dsl?deck=$PARAMETER_FILE" />
      <RSH description="Launch remote" value="host_name 3dsl $PARAMETER_FILE" />
    </OS>
  </Tool>
  - <Tool name="Eclipse">
    - <OS type="Win32">
      - <Command description="Launch local" value="W:\Applications\Eclipse $PARAMETER_FILE_WO_EXT">
        <EnvironmentVariable name="LM_LICENSE_FILE" value="7321@odeon" />
      </Command>
    </OS>
    - <OS type="linux-i86">
      - <Command description="Launch local" value="/apps/eclipse/bin/eclipse
        $PARAMETER_FILE_WO_EXT">
        <EnvironmentVariable name="LM_LICENSE_FILE" value="7321@odeon" />
      </Command>
    </OS>
    - <OS type="All">
      <Browser description="Launch browser" value="http://portal/eclipse?deck=$PARAMETER_FILE" />
      <RSH description="Launch remote" value="host_name eclipse $PARAMETER_FILE" />
    </OS>
  </Tool>
</Configuration>
```

Figure 3, Figure 4, and Figure 5 show the resulting **General Settings** (launch) panel with **Browser**, **Local host**, and **RSH** selected, respectively.

Figure 3 General Settings panel with Browser selected

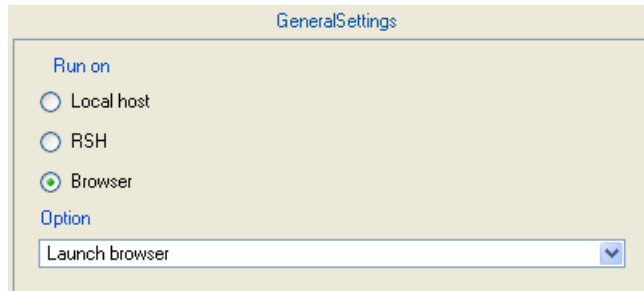


Figure 4 General Settings panel with Local host selected

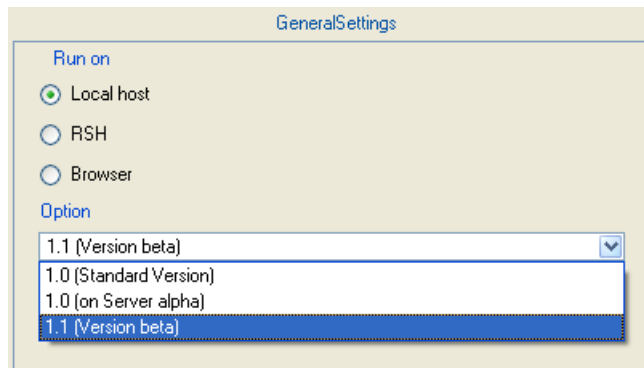
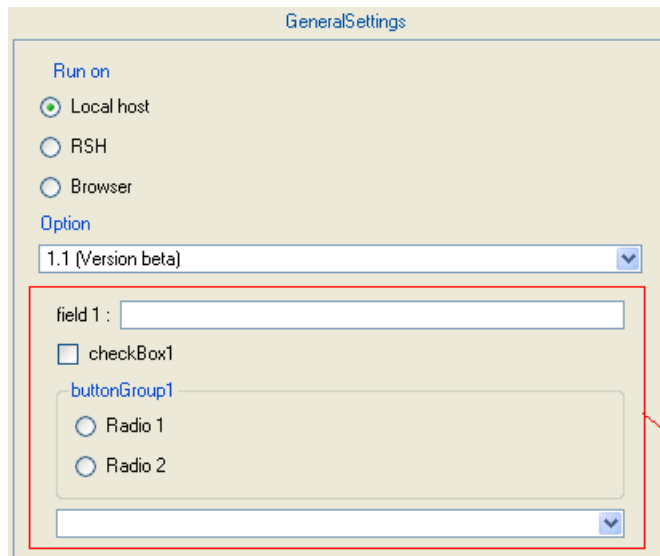


Figure 5 General Settings panel with Local host selected and custom UI component specified



User defined UI

Customizing the User Interface

The customization of the UI ("uicomponent" attribute) is limited to the following controls:

- **QLineEdit.** A single line edit control. The corresponding string variable will be replaced by the content of edit control.
- **QCheckBox.** A check box. If selected, the corresponding string variable is replaced by the label of the check box; if cleared, the string variable is replaced by empty text.
- **QButtonGroup.** An exclusive selection with radio buttons (**QRadioButton**). The corresponding string variable is replaced by the label of the selected radio button.
- **QSpinBox.** A line edit control with spin buttons. The corresponding string variable is replaced by the value of the edit control.
- **QListBox.** A single selection box. If a selection exists, the corresponding string variable is replaced by the selection text; if a selection does not exist, the macro is replaced by empty text.
- **QComboBox.** A combined line edit control and selection box. The string variable is replaced by the text of the combo selection.

Notes

- You should store the .ui file or files in the folder where run_config.xml resides: *InstallationPath*/PDGM/GOCAD-SKUA-2009.4/ReservoirProduction/lib/app-defaults/. A default file (default_custom_form.ui) is available as a template.
- Every "value" attribute (in Command, Browser, Rsh, and EnvironmentVariable) can contain references to UI fields. Those references are in the form of a string variable, "\$UI.field_name". This is illustrated in the preceding example, where the first widget is called "input_1," and its value is used through the string variable, "\$UI.input_1".

Predefined String Variables

Table 2 lists the predefined string variables of the *value* attribute.

Table 2 Predefined string variables

Macro	Description
\$PARAMETER_FILE	Full path name of parameter file (for example, "C:\Users\My_Models\study.dat"). This file will be generated by RSI compliant with the simulator selected.
\$PARAMETER_FILE_WO_EXT	Full path name of parameter file without extension (for example, "C:\Users\My_Models\study"). This file will be generated WITH the extension by RSI compliant with the simulator selected.

