Automated Upscaling to Property Modeling Workflow

This workflow is designed to automate the process of upscaling well logs and creating a petrophysical property model.

This is a two-part workflow – e.g. it includes a second nested workflow to create a property model inside the first Upscaling workflow.

**Prerequisites of the Property Modeling Workflow**

There are a few items that you need to have available before you run this workflow:

1) A 3D model – either a 3D Grid or a Structural Grid.
2) FE logs – vetted porosity or other petrophysical logs from the formation evaluation specialist. This example uses Porosity logs for input.
3) An open 3D window for visualization.

1. First, we need to create the workflow. Click on the Workflows tab, right click on the pane, and select *Insert workflow*

2. Double-click on the new workflow to open the workflow dialog. Rename the workflow something meaningful.
3. Click **Apply** to save the name. The next step is to create the first part of the workflow below – Please note comment lines:

![Workflow diagram]

4. Test the workflow until it works. You will need to **deactivate** the **Run** command at the bottom, because we have not yet created the second workflow.

5. Your model’s Properties folder should now have two upscaled properties, one original and one copy. The copy should be set to active **(bold)**.

![Properties folder]

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**Comment:** These instructions are part of a guide for creating workflows in a specific software tool. The steps involve setting up workflows, testing them, and managing properties within a model.
6. After the workflow above has been tested and runs successfully, create the second workflow:

<table>
<thead>
<tr>
<th>1</th>
<th>Part 2 of the workflow - Petrophysical Modeling</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td><strong>Drop the same 3D grid you used in the first part below</strong> - must be in depth</td>
</tr>
<tr>
<td>3</td>
<td>With 3D grid [ ] 3D grid - Simple / Make Horiz [ ] With copy [ ] Copy properties [ ]</td>
</tr>
<tr>
<td>4</td>
<td>Double-click on Petrophysical Modeling below to select your modeling input and parameters</td>
</tr>
<tr>
<td>5</td>
<td>Petrophysical modeling [ ] Copy of PCR_Upscaled [UI]</td>
</tr>
<tr>
<td>6</td>
<td>Set reference [ ] Variable AA [glob] [ ] Output [global]</td>
</tr>
<tr>
<td>7</td>
<td>Set visible [ ] Variable AA [global]</td>
</tr>
<tr>
<td>8</td>
<td>View all</td>
</tr>
<tr>
<td>9</td>
<td>Warning Property has been displayed. Press OK to continue.</td>
</tr>
</tbody>
</table>

7. Now reactivate and drop the second workflow into the Run command at the base of the first one. Apply – Test – and Run the workflow. Click OK on the message that appears and you should be looking at your 3D property model!

8. This workflow streamlines the amount of processes you need to run to create multiple iterations of a property model. Change the parameters for the Petrophysical Modeling process and re-run the workflow to see the new iterations appear in the Properties folder of your 3D model.
Notes about the workflow

1. This workflow does involve some “baby-sitting”, in the form of required user input at the Scale Up Logs and Petrophysical Modeling processes.

2. To automatically generate a Porosity Percent property, insert a Property Calculator after the Set Reference command at line 7 of the second workflow. Use an expression such as POR_PCT=(POR*100)

3. If you are using transforms to calculate PERM properties from Porosity, you can insert property calculators after generating the porosity percent volume in the second workflow. Use whatever permeability function your PE or FE has provided to you.