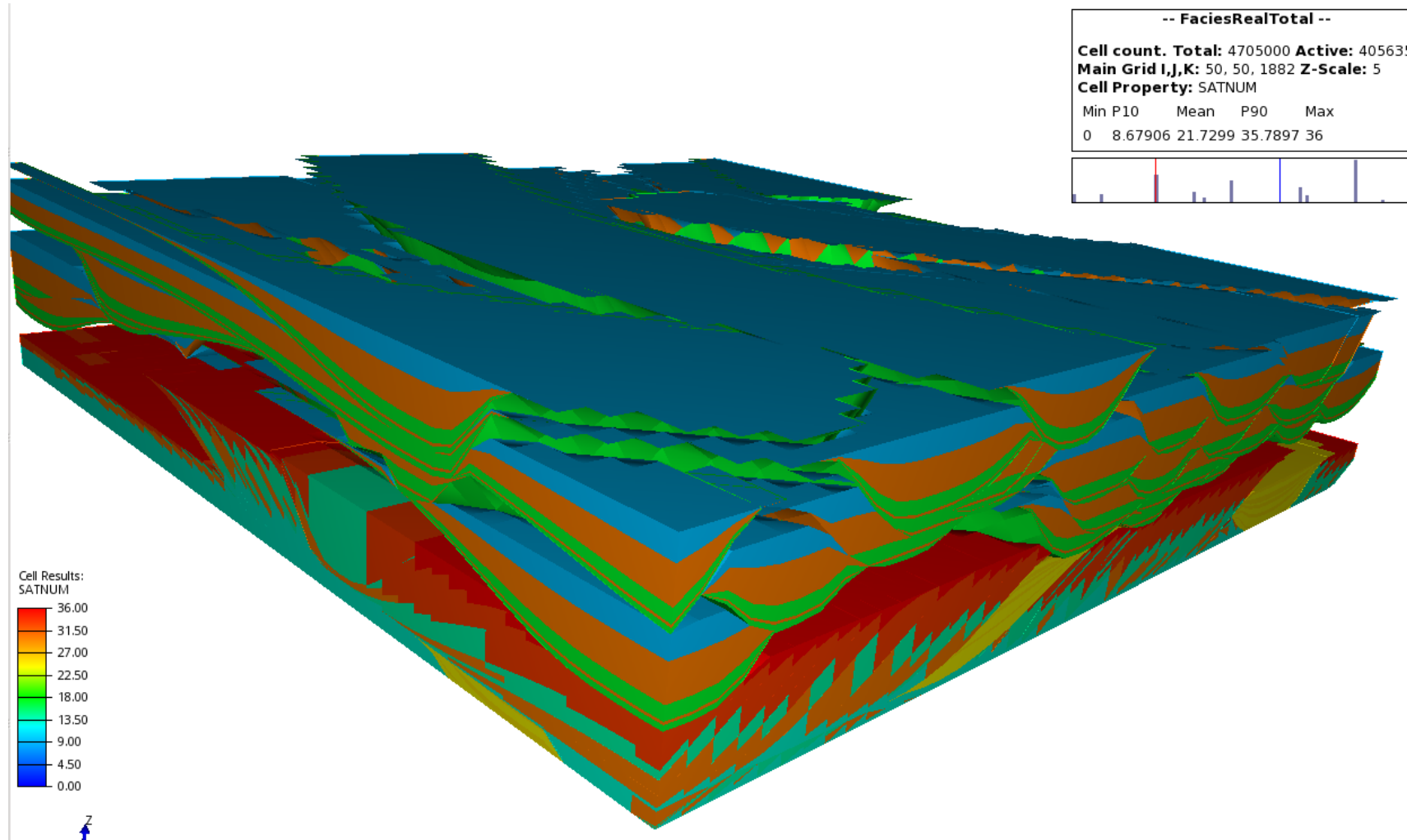


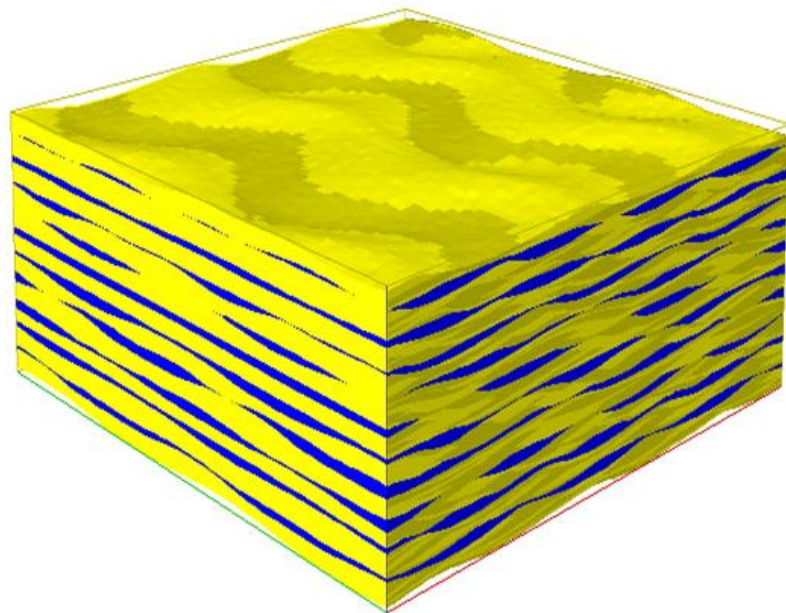
## Current status and overview

# History – why open source?



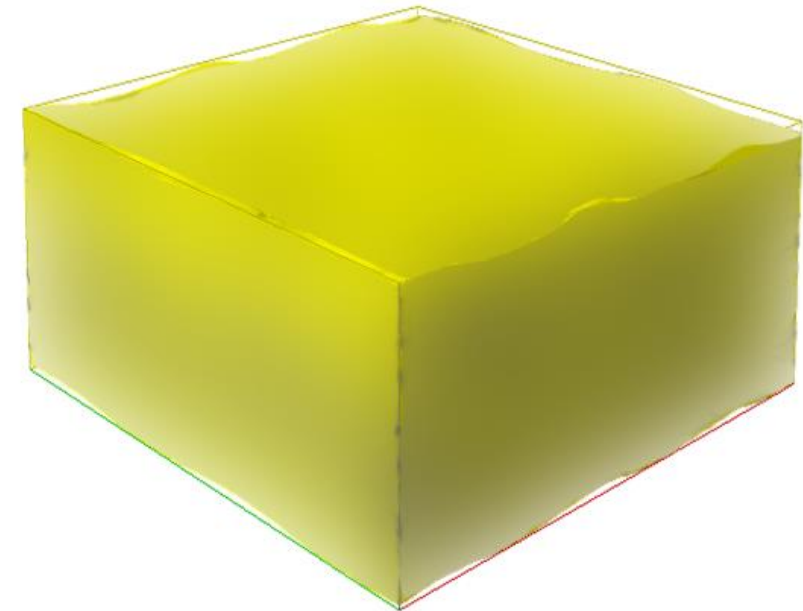
## Overview – a brief walk-through

## Upscaling – still there, still comprehensive



Heterogeneous model,  
homogeneous and isotropic cells

Upscaling



Homogeneous one-cell model,  
anisotropic



## Fracturing wells – on it's way



# OpenDect – application shows potential

3D Core simulation tool based on CT-images

## Structure

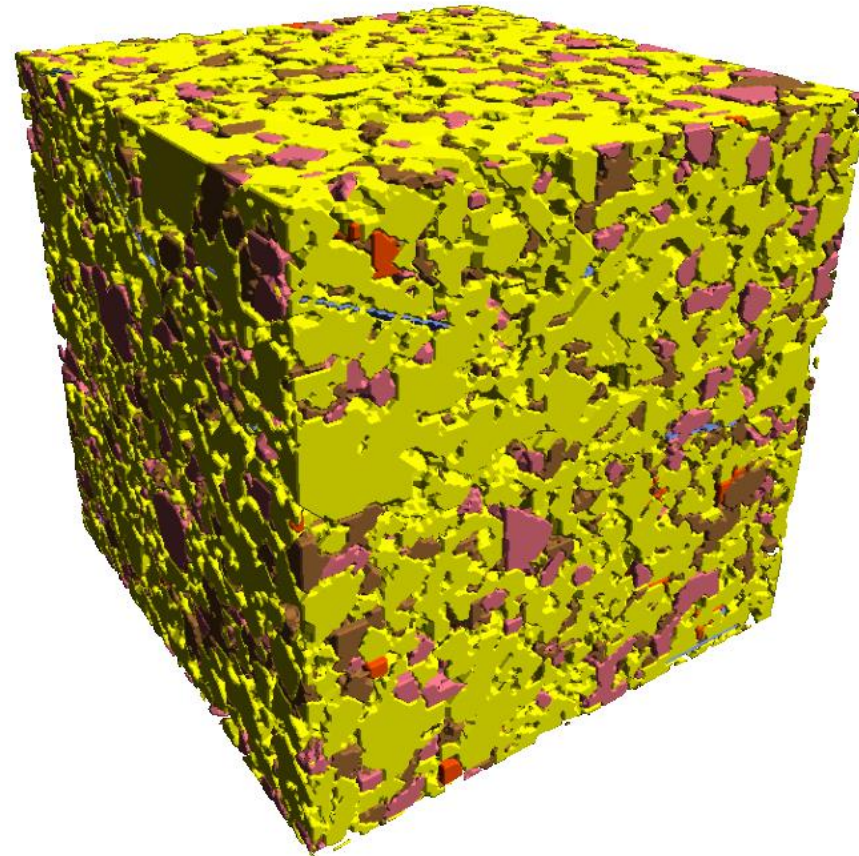
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Here are described the major steps in the code:

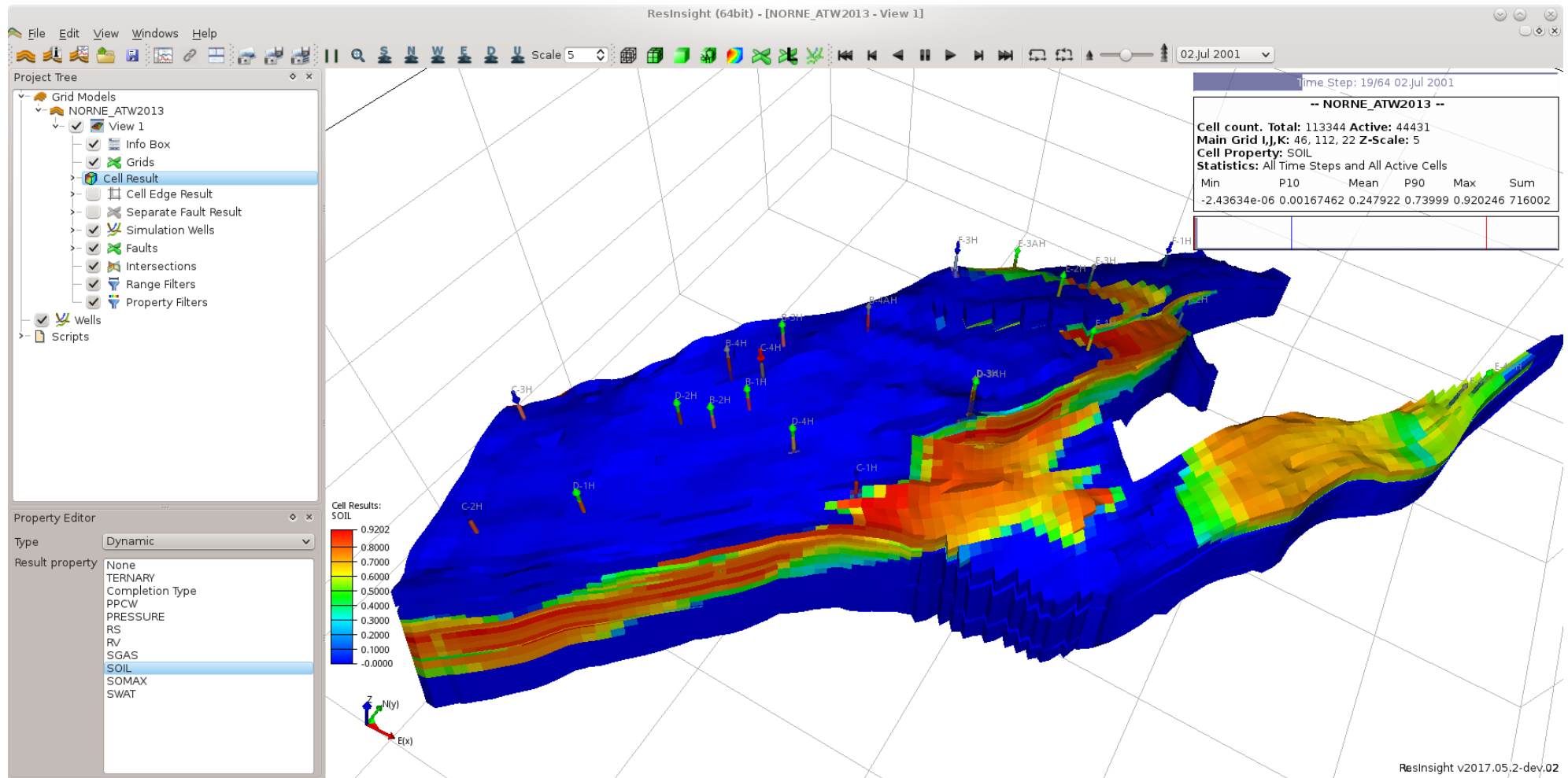
1. Read CT scan DICOM file using the pydicom library
2. Select an area of interest, typically where rock samples were taken for core analysis.
3. The porosity, density and photoelectric factor are derived for each pixel in this region.
4. A 3D grid model is built based on upscaled porosity from the CT scan. Permeability is user-defined or picked from a trend.
5. The flowing experiment is chosen and an eclipse file is run using OPM Flow
6. The relative permeabilities are history-matched using Swarm algorithm (possibly ERT Ensemble at some stage)



## Pore scale modelling - new kid on the block



# ResInsight – conquering the world





# Flow – last but not least

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OPEN POROUS MEDIA - Okular

6.3.64 MULTREGT- MULTIPLY TRANSMISSIBILITIES BETWEEN REGIONS

RUNSPEC

GRID

EDIT

PROPS

REGIONS

SOLUTION

SUMMARY

SCHEDULE

6.3.65 DESCRIPTION

The MULTREGT keyword multiplies the transmissibility between two regions by a constant. The region number array can be FLUXNUM, MULTNUM or OPERNUM and these arrays must be defined and be available before the MULTREGT keyword is read by the simulator. The constant should be a real number.

No.	Name	Description	Default
1	REGION1	A positive integer value that defines the from REGION number for which the CONSTANT in (2) should be applied.	None
2	REGION2	A positive integer value that defines the to REGION number for which the CONSTANT in (2) should be applied.	None
3	CONSTANT	A real value to multiply the transmissibility between REGION1 and REGION2.	0
4	DIR	A character string that defines the direction to apply the transmissibility multiplier between the two regions, should be set to one of the following X,Y,Z,XY,YX,XZ, or XYZ.	XYZ
	TYPE	<p>A character string that defines the type of connections the transmissibility multiplier should be applied to, should be one of the following:</p> <ol style="list-style-type: none"> <li>1) NNC - Only apply the transmissibility multiplier between REGION1 and REGION2 to non-neighbor connections.</li> <li>2) NONNC - Do not apply the transmissibility multiplier between REGION1 and REGION2 to non-neighbor connections.</li> <li>3) ALL - Apply the transmissibility multiplier between REGION1 and REGION2 to all connections.</li> </ol>	ALL
4	REGION ARRAY	<p>The REGION ARRAY to use for applying the CONSTANT in (2) based on the REGION NUMBER in (1). REGION ARRAY can have the following values:</p> <ol style="list-style-type: none"> <li>1) F for the FLUXNUM array</li> <li>2) M for the MULTNUM array</li> <li>3) O for the OPERNUM array</li> </ol>	M

**Notes:**

- 1) Where the REGION NUMBER should be less than or equal to the maximum number of regions as defined on the REGDIMS keyword for the FIPNUM and OPERNUM arrays or the GRIDOPTS keyword for the MULTNUM array in the RUNSPEC section.
- 2) Each record must be terminated by a "/" and the keyword is terminated by "/".

Table 6.56: MULTREGT Keyword Description

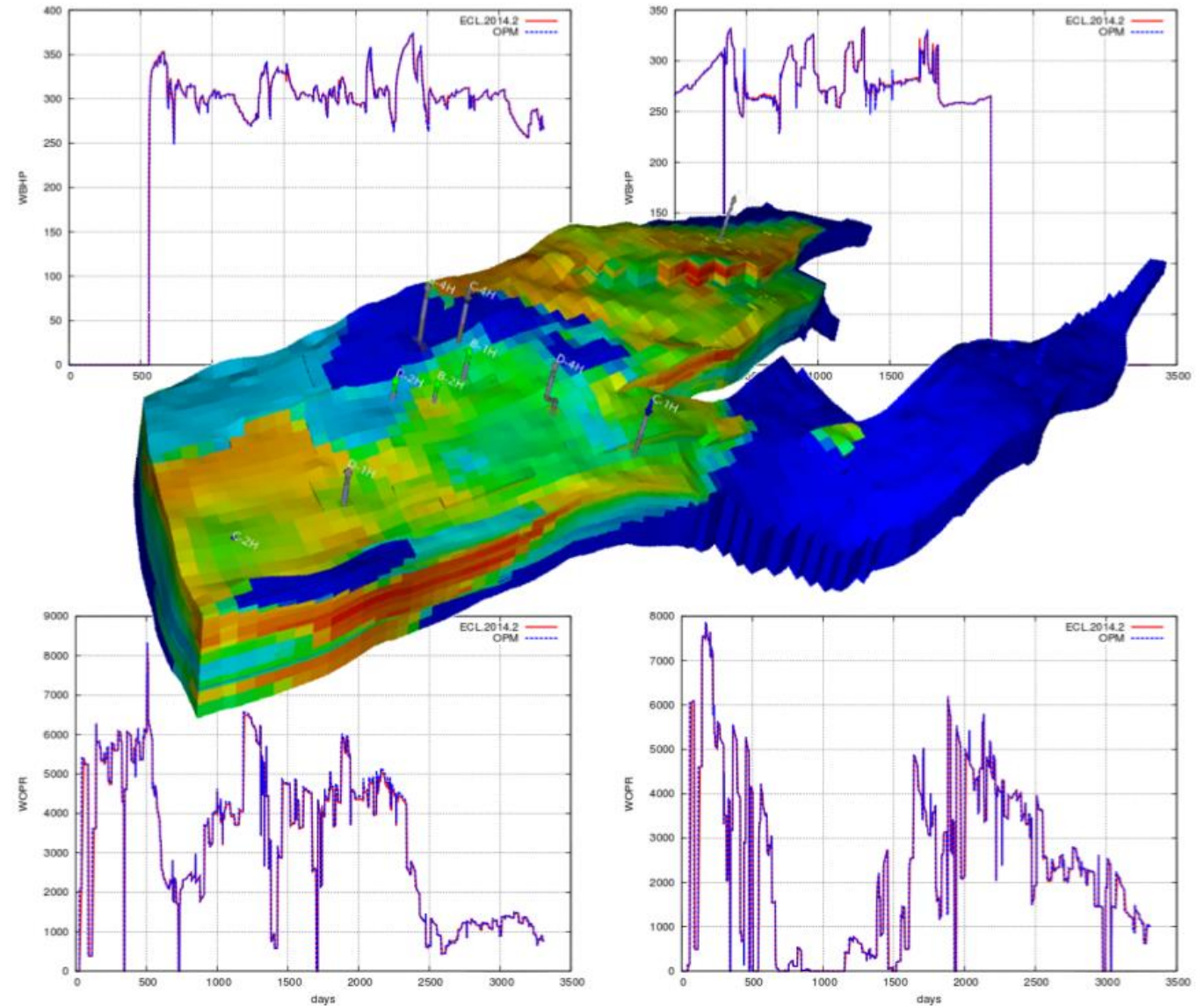
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Open

# Flow – major achievements

- Drop-in replacement
- Leading performance
- Competitive scaling
- Large and quickly growing feature set
- Unique CO2EOR implementation
- Polymer is still there



## Flow – what is missing now?

- Robust test-framework
- Lots of basic functionality
- Debugging
- Robust scaling
- Technical documentation

