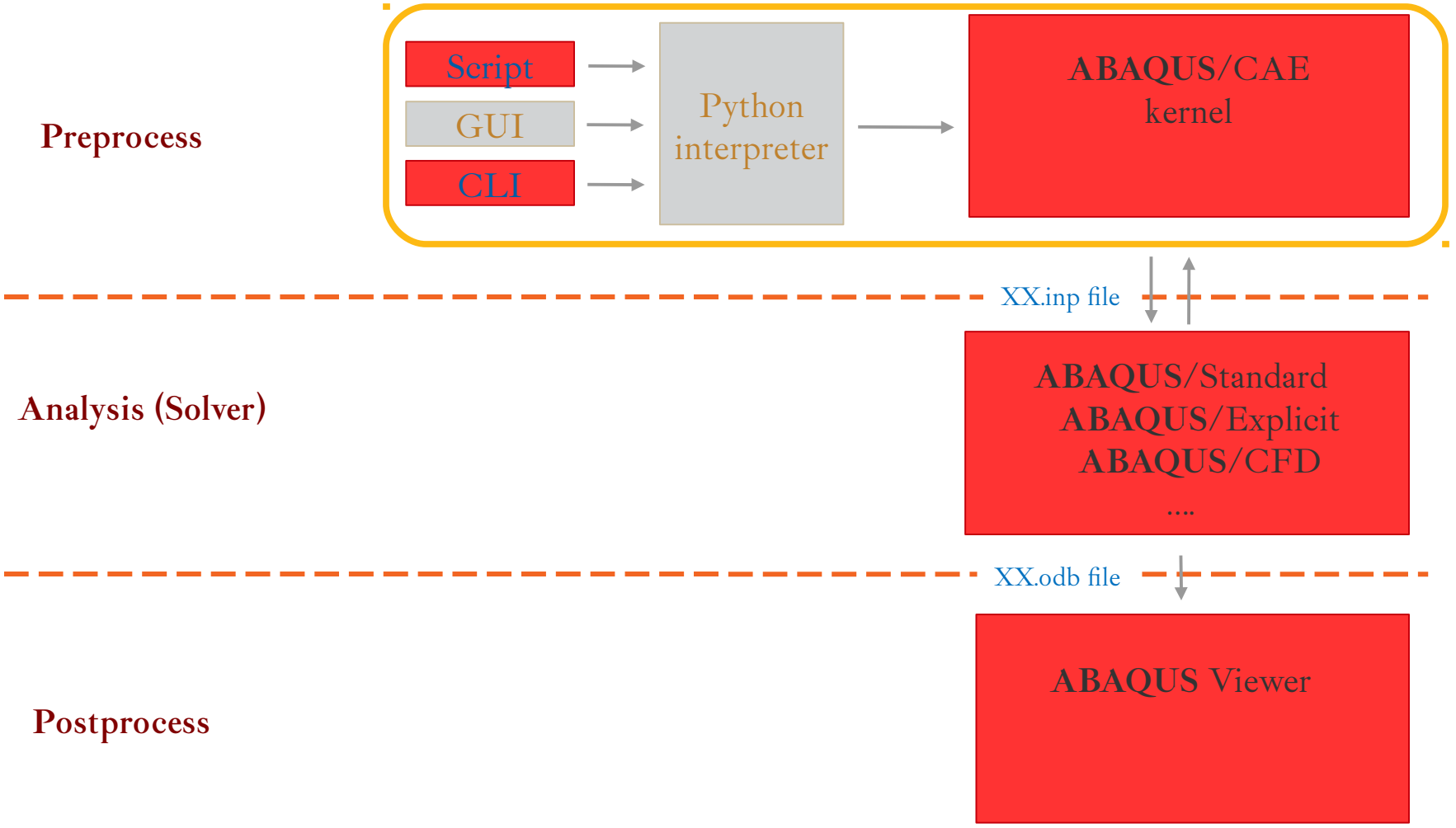
Spring 2017 Workshop

Scripting in Abaqus

ABAQUS Ecosystem



ABAQUS Scripting

```
$ abaqus cae script=myscript.py
$ abaqus cae noGUI=myscript.py   # w/o opening CAE
```

Example:

1. Run the following commands at the CLI:

```
$ abaqus fetch job=modelAExample
$ abaqus cae
```

2. Run script → `modelAExample.py` → OK.

ABAQUS Scripting

```
from abaqus import *
from abaqusConstants import *
backwardCompatibility.setValues( includeDeprecated=True, reportDeprecated=False )

import sketch
import part

myModel = mdb.Model( name='Model A' )
mySketch = myModel.ConstrainedSketch( name='Sketch A', sheetSize=200.0 )

# generate sketch lines
xyCoordsInner = (( -5,  20), (  5,  20), ( 15,   0), (-15,   0), ( -5,  20))
xyCoordsOuter = ((-10,  30), ( 10,  30), ( 40, -30), ( 30, -30), ( 20, -10), (-20, -10),
                 (-30, -30), (-40, -30), (-10,  30))
for i in range( len(xyCoordsInner)-1 ):
    mySketch.Line(point1=xyCoordsInner[ i ],
        point2=xyCoordsInner[ i+1 ])
for i in range( len(xyCoordsOuter)-1 ):
    mySketch.Line( point1=xyCoordsOuter[ i ],
                   point2=xyCoordsOuter[ i+1 ] )

# extrude sketch as part
myPart = myModel.Part( name='Part A', dimensionality=THREE_D, type=DEFORMABLE_BODY )
myPart.BaseSolidExtrude( sketch=mySketch, depth=20.0 )

# set up viewport to show part
myViewport = session.Viewport( name='Viewport for Model A', origin=(10, 10), width=150, height=100 )
myViewport.setValues( displayedObject=myPart )
myViewport.partDisplay.setValues( renderStyle=SHADED )
```

ABAQUS Scripting

1. You can drive the CAE using a script like Masoud Safdari's:

```
SafdariHeatOpt.py

$ abaqus cae script=SafdariHeatOpt.py
```

or starting from a `guiLog` file.

2. Alternatively, you can drive the kernel directly using `INP` files using a script like Matt Zappulla's:

```
ZappullaBasicTemplate.inp

ZappullaParametricStudyDiscreteTemplate.psf

$ abaqus script=ZappullaParametricStudyDiscreteTemplate

  #note no suffix on file name
```