



ASAP™ Documentation | Release 0.0.1

March 30th, 2017

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PREREQUISITES

- ASAP is currently developed for Windows 64-bit Python 3.5
 - Pre-built binaries for geometry kernel and meshing tools are available
 - Other platforms and Python versions will be available in the future
- Anaconda Python is **strongly** recommended
 - Simple and powerful package management system
 - Pre-built binaries will self-install from Anaconda cloud

INSTALLING ANACONDA PYTHON

- Anaconda Python installers can be found here:
 - <https://www.continuum.io/downloads>
 - Recommended install directory is something like “C:\Anaconda” (avoid spaces)

Install Python 3.6 64-bit as root environment. Python 3.5 environment specifically for ASAP will be created afterwards.

Download for Windows | Download for macOS | Download for Linux

Anaconda 4.3.1

For Windows

Anaconda is BSD licensed which gives you permission to use Anaconda commercially and for redistribution.

[Changelog](#)

1. Download the installer
2. Optional: Verify data integrity with [MD5](#) or [SHA-256](#) [More info](#)
3. Double-click the **.exe** file to install Anaconda and follow the instructions on the screen

Behind a firewall? Use these [zipped Windows installers](#)

Python 3.6 version

64-BIT INSTALLER (422M)

32-BIT INSTALLER (348M)

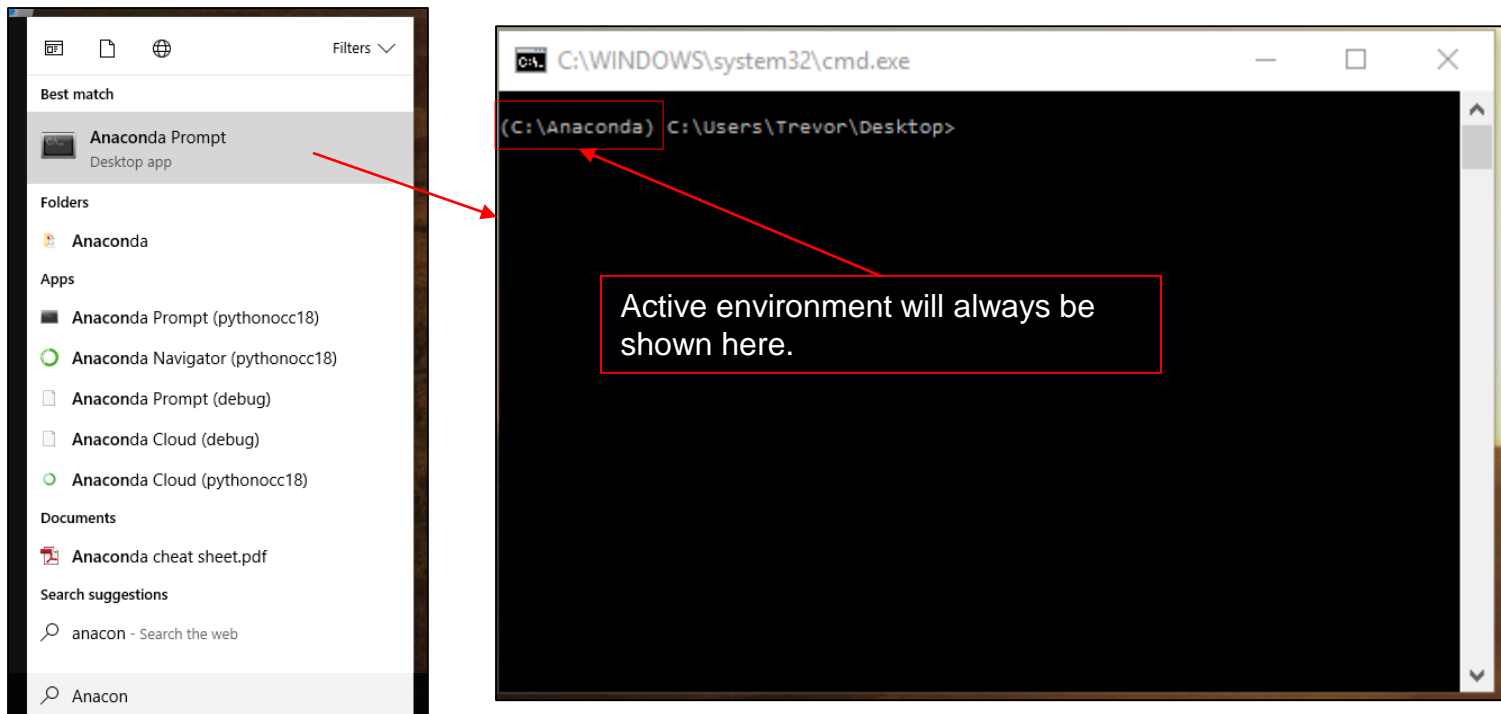
Python 2.7 version

64-BIT INSTALLER (414M)

32-BIT INSTALLER (339M)

INSTALLING ANACONDA PYTHON

- The “Anaconda Prompt” should now be available
 - Use “conda” command to create environments, manage packages, etc.



INSTALLING DEPENDENCIES

- Create a designated conda environment for ASAP
 - This will create a clean separation between ASAP required packages and other Python installations and packages

conda create -n *name* python=3.5

```
C:\WINDOWS\system32\cmd.exe
(C:\Anaconda) C:\Users\Trevor\Desktop>conda create -n asap python=3.5
```

The environment name can be anything. Make sure to specify python=3.5.

```
C:\WINDOWS\system32\cmd.exe - conda create -n asap pyt...
(C:\Anaconda) C:\Users\Trevor\Desktop>conda create -n asap python=3.5
Fetching package metadata .....
Solving package specifications: .

Package plan for installation in environment C:\Anaconda\envs\asap:

The following NEW packages will be INSTALLED:

  pip:                9.0.1-py35_1
  python:             3.5.3-0
  setuptools:         27.2.0-py35_1
  vs2015_runtime:     14.0.25123-0
  wheel:              0.29.0-py35_0

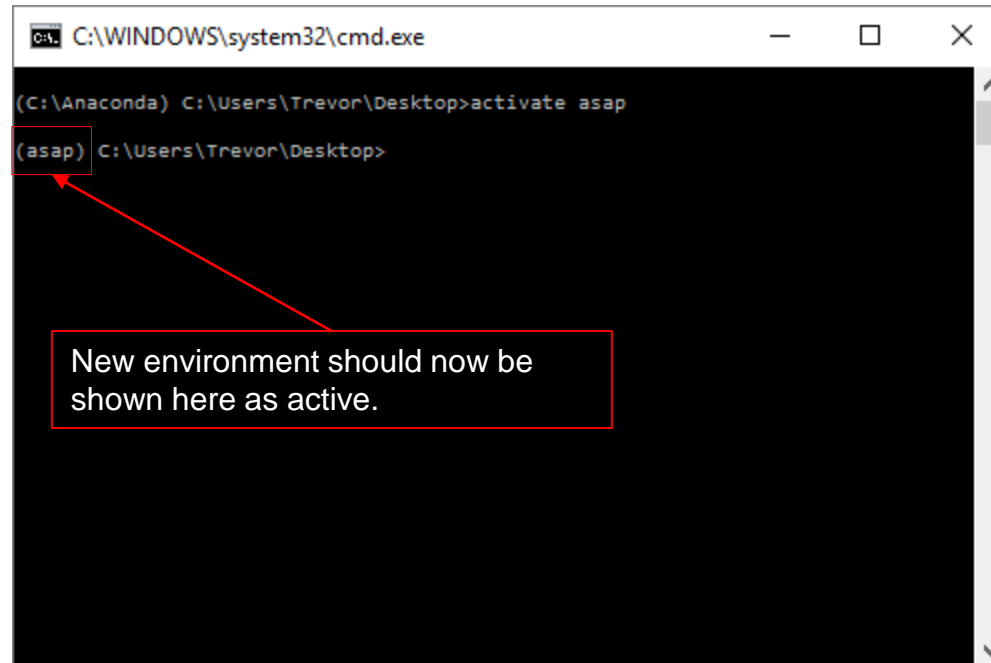
Proceed ([y]/n)? y
```

Note: A lot of junk may show up after installation in the command prompt. Ignore this. It appears to be a bug in conda.

INSTALLING DEPENDENCIES

- Activate the new environment

activate name



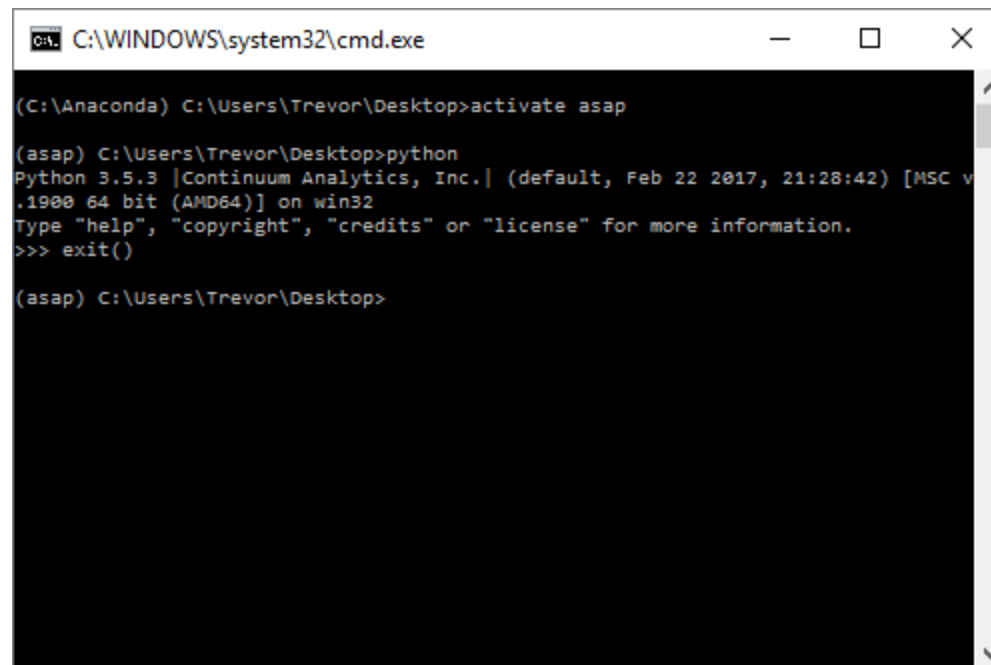
```
C:\WINDOWS\system32\cmd.exe

(C:\Anaconda) C:\Users\Trevor\Desktop>activate asap
(asap) C:\Users\Trevor\Desktop>
```

New environment should now be shown here as active.

INSTALLING DEPENDENCIES

- Activating an environment sets the systems paths such that they point to the environment Python interpreter and packages
 - Launching “python” from the activated environment should show Python 3.5
 - By default packages will be installed to active environment unless a name is given



```
C:\WINDOWS\system32\cmd.exe

(C:\Anaconda) C:\Users\Trevor\Desktop>activate asap

(asap) C:\Users\Trevor\Desktop>python
Python 3.5.3 [Continuum Analytics, Inc.] (default, Feb 22 2017, 21:28:42) [MSC v
.1900 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> exit()

(asap) C:\Users\Trevor\Desktop>
```

INSTALLING DEPENDENCIES

- First install OpenCascade Community Edition, PythonOCC, SMESH, and Netgen from the Anaconda cloud using an Anaconda Prompt with the previously created environment activated
- All of this will be done with one command:

```
conda install -c trelau -c oce -c dlr-sc pythonocc-core
```

install command will install the packages in the active environment

-c command adds channels to search for dependencies on the Anaconda cloud

pythonocc-core is the name of package we are searching for and installing

INSTALLING DEPENDENCIES

```
C:\WINDOWS\system32\cmd.exe - conda install -c trelau -c oce -c dlr-sc ...  
(C:\Anaconda) C:\Users\Trevor\Desktop>activate asap  
(asap) C:\Users\Trevor\Desktop>conda install -c trelau -c oce -c dlr-sc pythonocc-core  
Fetching package metadata .....  
Solving package specifications: .  
  
Package plan for installation in environment C:\Anaconda\envs\asap:  
  
The following NEW packages will be INSTALLED:  
  
  expat:          2.1.0-vc14_2      dlr-sc [vc14]  
  freeimage:     3.17.0-vc14_3     dlr-sc [vc14]  
  freetype:      2.6.3-vc14_1      dlr-sc [vc14]  
  future:        0.16.0-py35_1     [vc14]  
  gl2ps:         1.3.8-vc14_3      dlr-sc [vc14]  
  hdf5:          1.8.17-vc14_0     [vc14]  
  icu:           57.1-vc14_0       [vc14]  
  jpeg:          9b-vc14_0         dlr-sc [vc14]  
  libpng:        1.6.27-vc14_0     [vc14]  
  libtiff:       4.0.6-vc14_3      [vc14]  
  libxml2:       2.9.3-vc14_1      dlr-sc [vc14]  
  netgen:        6.2-vc14_0        trelau [vc14]  
  oce:           0.17.2-vc14_1     oce [vc14]  
  openssl:       1.0.2k-vc14_0     [vc14]  
  pyqt:          5.6.0-py35_2      [vc14]  
  pythonocc-core: smesh-py35_vc14_49 trelau [vc14]  
  qt:            5.6.2-vc14_3      [vc14]  
  sip:           4.18-py35_0       [vc14]  
  smesh:         7.7.1-vc14_61     trelau [vc14]  
  tbb:           4.3.6-vc14_1      dlr-sc [vc14]  
  vtk:           7.0.0-py35_vc14_2 dlr-sc [vc14]  
  zlib:          1.2.8-vc14_3      [vc14]  
  
Proceed ([y]/n)?
```

Verify packages and channels as shown. Other dependencies should resolve automatically. Install may take a few minutes.

INSTALLING DEPENDENCIES

- The conda directory can be cleaned using the command “conda clean -a”

INSTALLING DEPENDENCIES

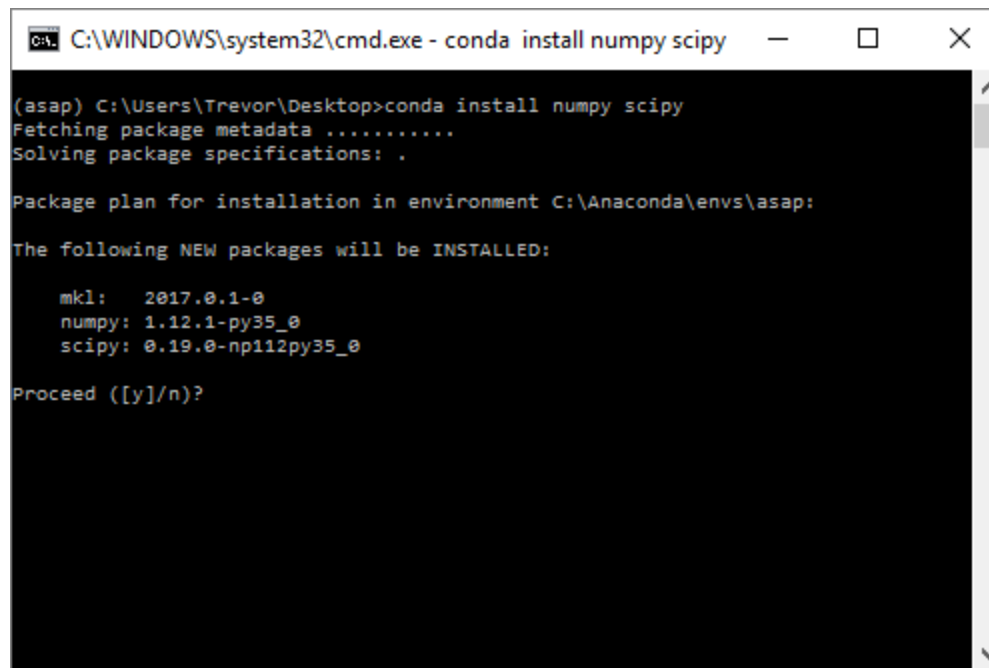
- ASAP is currently optimized to work with a modified version of OpenVSP and can be downloaded here:

[OpenVSP-3.5.0-metadata-py35-win64](#)

- Changes include exporting metadata to the STEP file and additional reference surfaces for wing components

INSTALLING DEPENDENCIES

- Install numpy and scipy
 - “conda install numpy scipy”



```
C:\WINDOWS\system32\cmd.exe - conda install numpy scipy

(asap) C:\Users\Trevor\Desktop>conda install numpy scipy
Fetching package metadata .....
Solving package specifications: .

Package plan for installation in environment C:\Anaconda\envs\asap:

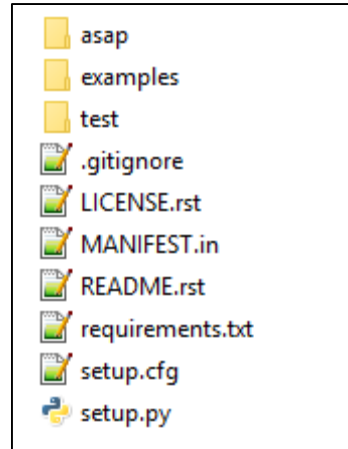
The following NEW packages will be INSTALLED:

    mkl:      2017.0.1-0
    numpy:    1.12.1-py35_0
    scipy:    0.19.0-np112py35_0

Proceed ([y]/n)?
```

INSTALLING ASAP

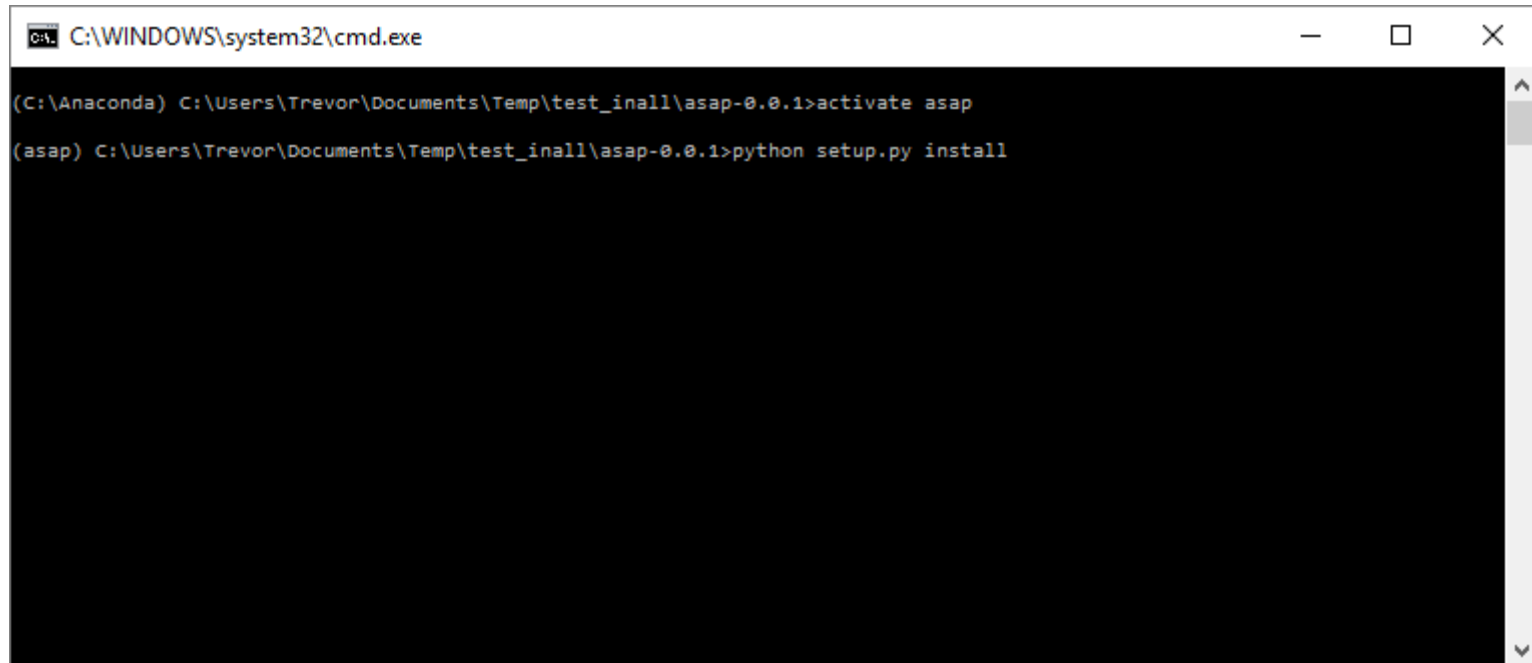
- ASAP is currently distributed as a “source distribution”
- Place “ASAP-0.0.1” in desired directory
- Contents should look like:



INSTALLING ASAP

- Launch an Anaconda Prompt from the ASAP-0.0.1 folder, activate the previously created environment, and install using the command

python setup.py install

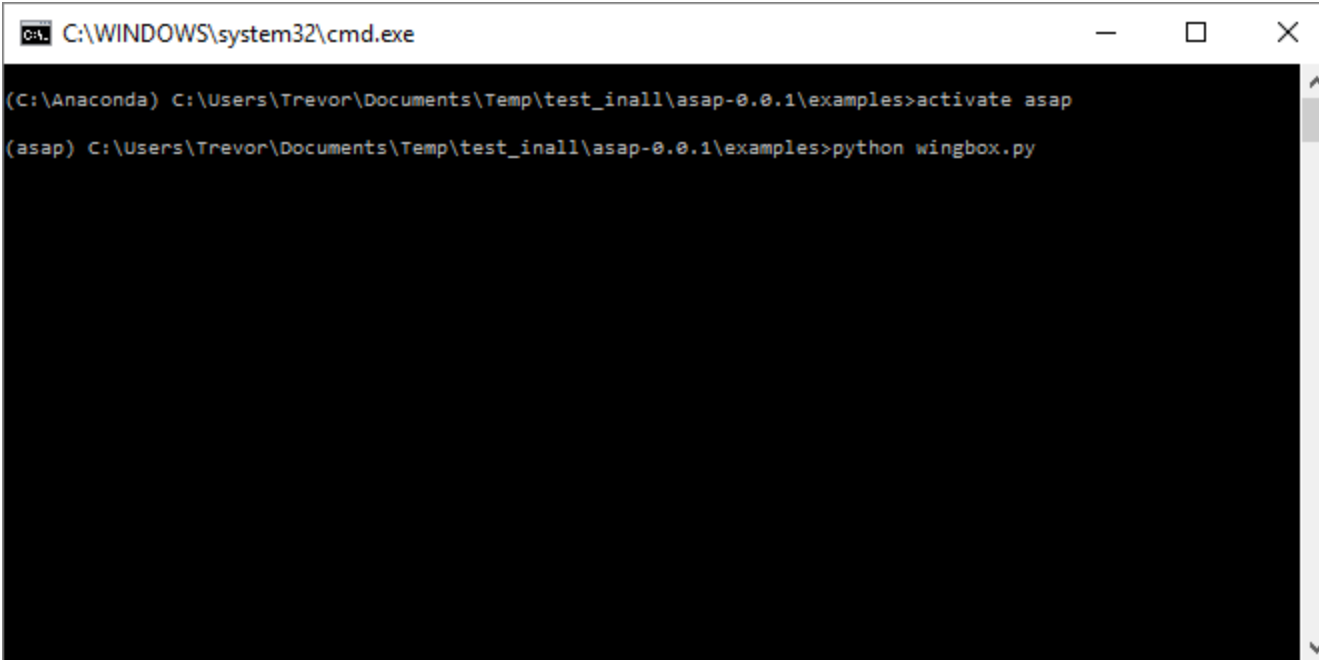


```
C:\WINDOWS\system32\cmd.exe

(C:\Anaconda) C:\Users\Trevor\Documents\Temp\test_inall\asap-0.0.1>activate asap
(asap) C:\Users\Trevor\Documents\Temp\test_inall\asap-0.0.1>python setup.py install
```


EXAMPLES

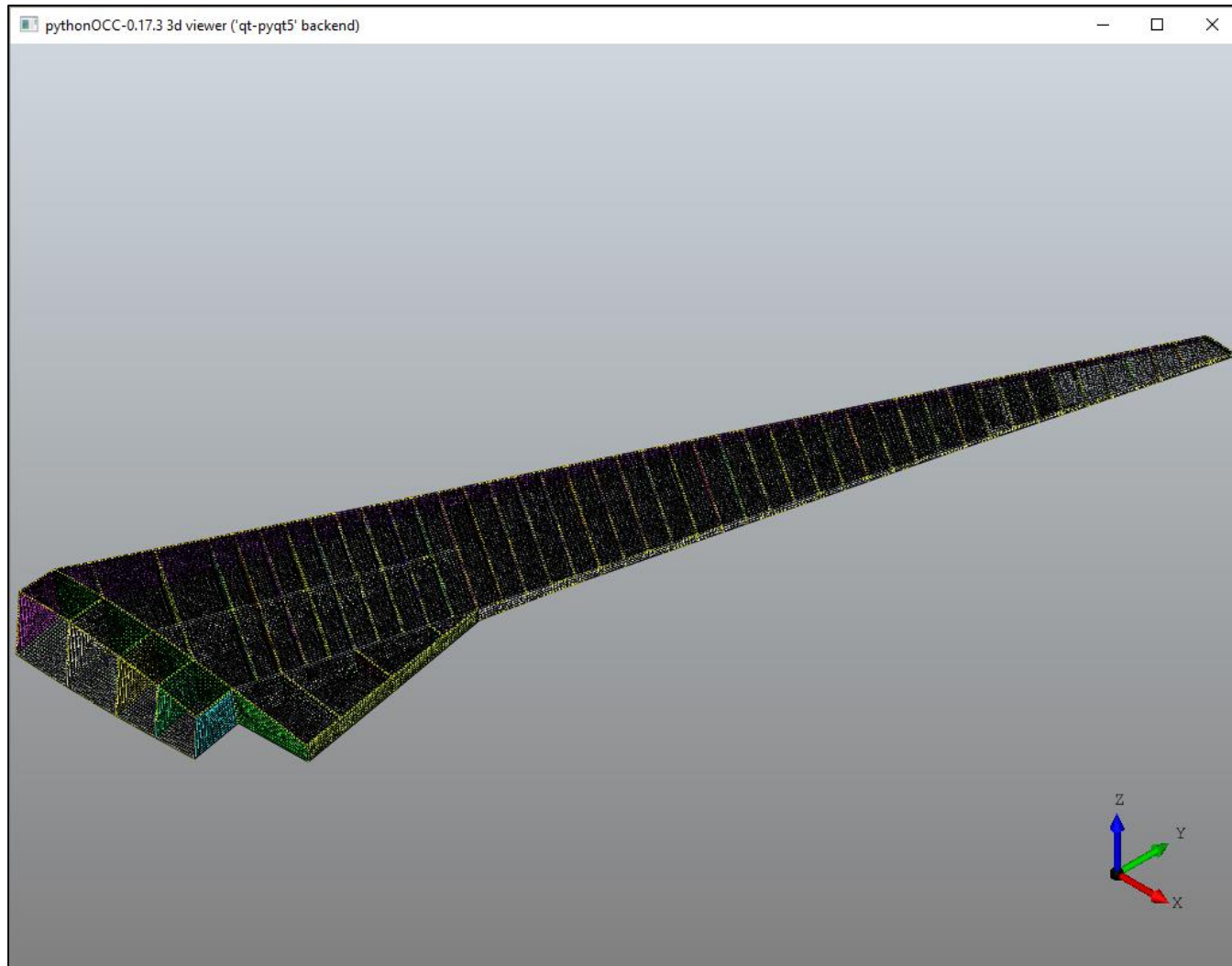
- Navigate to the “examples” folder and run the wingbox.py script from an Anaconda Prompt with the appropriate environment activated



```
C:\WINDOWS\system32\cmd.exe

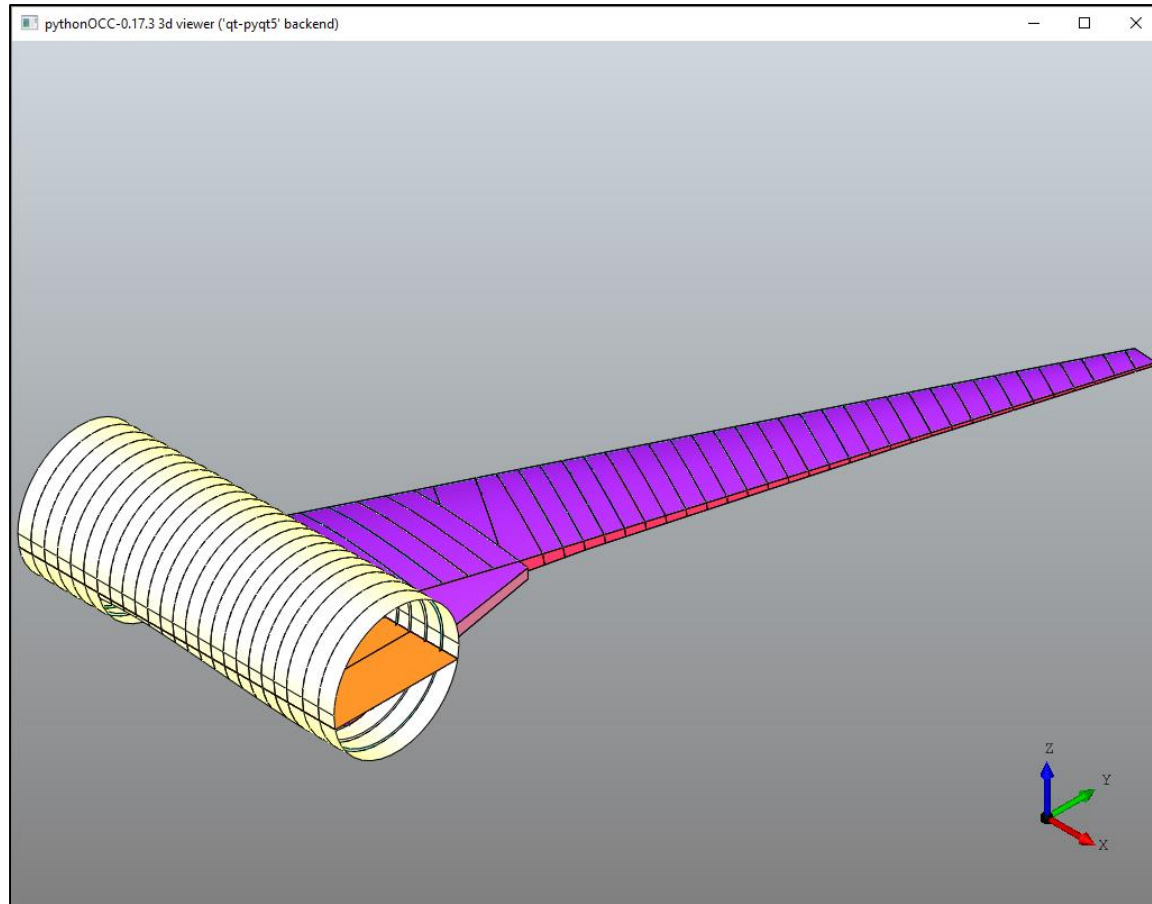
(C:\Anaconda) C:\Users\Trevor\Documents\Temp\test_inall\asap-0.0.1\examples>activate asap
(asap) C:\Users\Trevor\Documents\Temp\test_inall\asap-0.0.1\examples>python wingbox.py
```

EXAMPLES



EXAMPLES

`python wing-body.py`





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