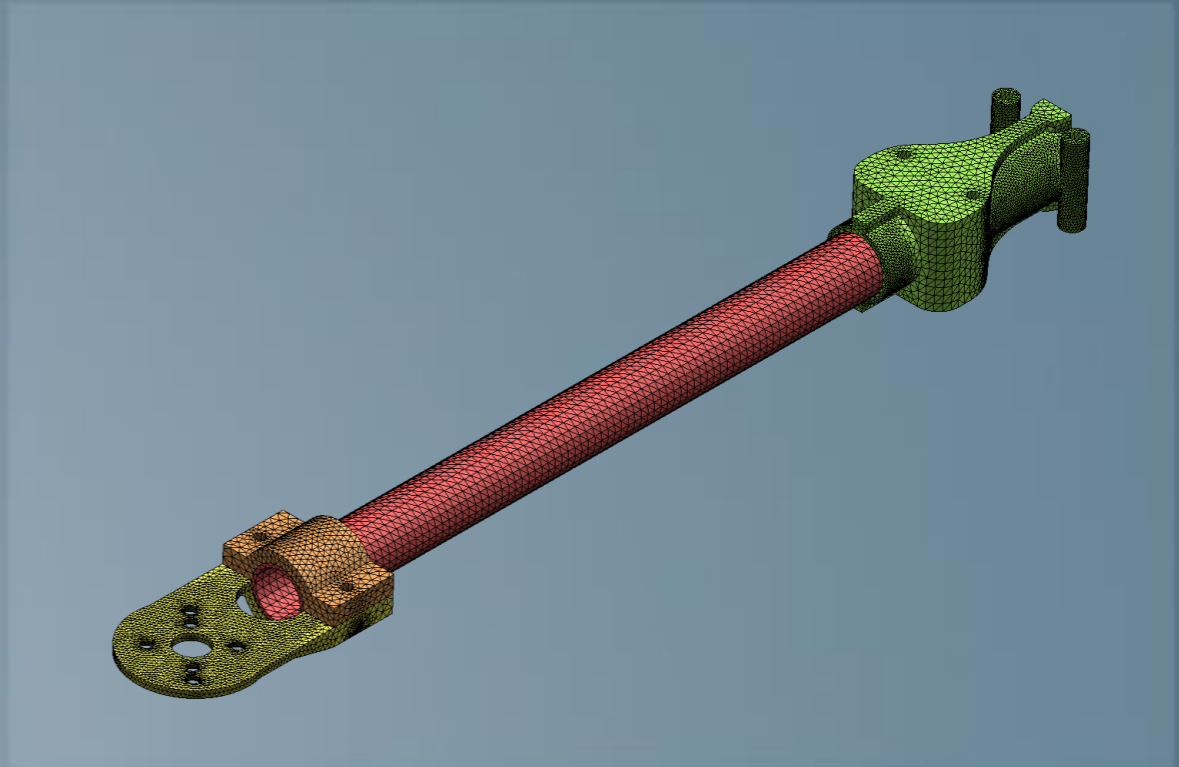


# Structural Model Creation: Geometry and Meshing

R2015x



3DEXPERIENCE



# About this Course

## Course objectives

Upon completion of this course you will be able to:

- ▶ Clean and repair native and imported geometry.
- ▶ Use advanced meshing techniques.

## Targeted audience

This course is intended for the following roles:

- ▶ Mechanical Analyst
- ▶ Structural Vibration Analyst
- ▶ Noise & Vibration Analyst
- ▶ Multiphysics Simulation Researcher
- ▶ Finite Element Modeling & Assembly Specialist

## Prerequisites

The following course is required prior to taking this one:

- ▶ Structural Model Creation Essentials



2 days

# Day 1

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- ▶ Lesson 1                    Geometric Operations
  - Workshop 1a   Pump – Importing and Defeaturing Geometry
  - Workshop 1b   Defeaturing of a Lens Component
  - Workshop 1c   Defeaturing a Machine Part
  
- ▶ Lesson 2                    Meshing Basics
  - Workshop 2a   Intersecting Pipes – Octree Mesh
  - Workshop 2b   Wire Crimp Assembly Mesh
  
- ▶ Lesson 3                    Surface Meshing
  - Workshop 3     Seat Assembly Component Meshing

## Day 2

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- ▶ Lesson 4                    Solid Meshing
  - Workshop 4a   Engine Block – Surface Rules Mesh
  - Workshop 4b   Intersecting Pipes – Partitioning
  
- ▶ Lesson 5                    Rule Based Meshing
  - ▶ Workshop 5    Arm Assembly – Rule Based Solid Meshing
  
- ▶ Lesson 6                    Mesh Transformations
  - Workshop 6a   Gear Tooth – Transformation Mesh
  - Workshop 6b   Piston Head – Meshing
  
- ▶ Lesson 7                    Importing Meshes and Editing Surface Meshes
  - Workshop 7    Importing and Editing a Mesh
  
- ▶ Lesson 8                    Mesh Checking and Visualization

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# Revision Status

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<b>Lesson 1</b>	<b>2/15</b>	<b>Updated for R2015x</b>
<b>Lesson 2</b>	<b>2/15</b>	<b>Updated for R2015x</b>
<b>Lesson 3</b>	<b>2/15</b>	<b>Updated for R2015x</b>
<b>Lesson 4</b>	<b>2/15</b>	<b>Updated for R2015x</b>
<b>Lesson 5</b>	<b>2/15</b>	<b>New for R2015x</b>
<b>Lesson 6</b>	<b>2/15</b>	<b>Updated for R2015x</b>
<b>Lesson 7</b>	<b>2/15</b>	<b>Updated for R2015x</b>
<b>Lesson 8</b>	<b>2/15</b>	<b>Updated for R2015x</b>
<b>Workshop 1a</b>	<b>2/15</b>	<b>Updated for R2015x</b>
<b>Workshop 1b</b>	<b>2/15</b>	<b>Updated for R2015x</b>
<b>Workshop 1c</b>	<b>2/15</b>	<b>Updated for R2015x</b>
<b>Workshop 2a</b>	<b>2/15</b>	<b>Updated for R2015x</b>
<b>Workshop 2b</b>	<b>2/15</b>	<b>Updated for R2015x</b>
<b>Workshop 3</b>	<b>2/15</b>	<b>New for R2015x</b>
<b>Workshop 4a</b>	<b>2/15</b>	<b>Updated for R2015x</b>
<b>Workshop 4b</b>	<b>2/15</b>	<b>Updated for R2015x</b>
<b>Workshop 5</b>	<b>2/15</b>	<b>New for R2015x</b>
<b>Workshop 6a</b>	<b>2/15</b>	<b>Updated for R2015x</b>
<b>Workshop 6b</b>	<b>2/15</b>	<b>Updated for R2015x</b>
<b>Workshop 7</b>	<b>2/15</b>	<b>Updated for R2015x</b>

# Lesson 1: Geometric Operations

## *Lesson content:*

- ▶ Introduction
- ▶ Accessing the Simulation Model Preparation app
- ▶ The Simulation Model Preparation app
- ▶ Geometric checkers
- ▶ Join
- ▶ Healing
- ▶ Remove Face
- ▶ Replace Face
- ▶ Defeature a shape
- ▶ Split
- ▶ Extract
- ▶ Trim
- ▶ Mid Surface
- ▶ Close Surface
- ▶ Projection
- ▶ Visualization Management
- ▶ Clipping Box
- ▶ Status Bar
- ▶ Advanced Tools
- ▶ Workshop Preliminaries



1.5 hours

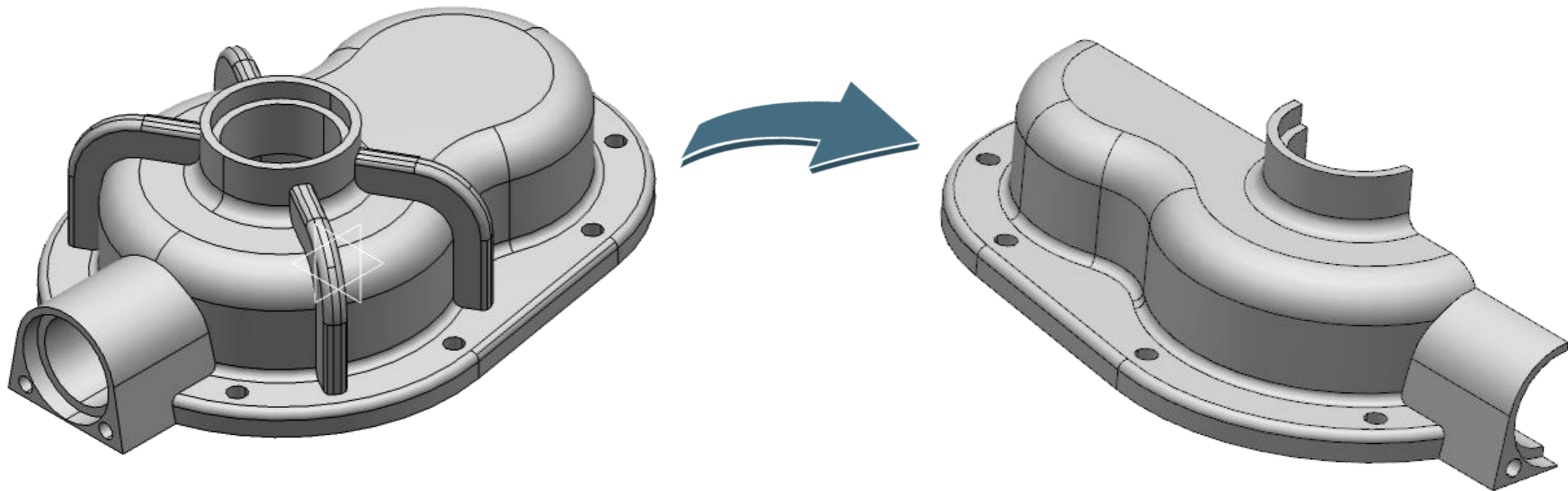


# Workshop: Pump – Importing and Defeaturing Geometry

In this workshop you will import and de-feature a solid model of a pump housing.

After completion of this exercise, you will be able to:

- Import CAD files into the 3DEXPERIENCE Platform
- Defeature a part by removing faces.
- Change geometric features



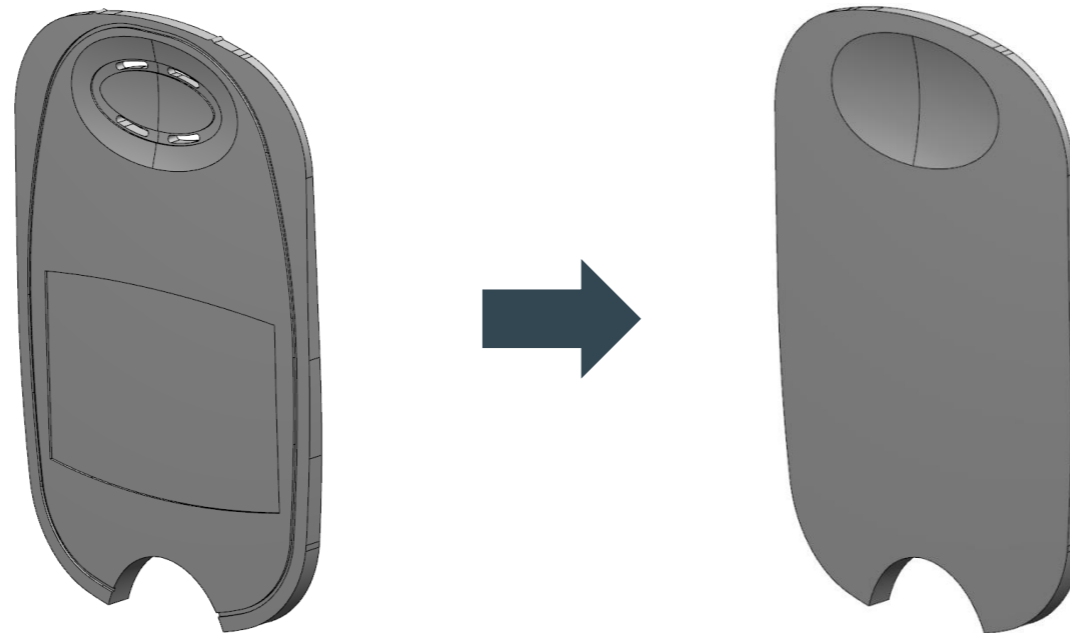
30 minutes

# Workshop: Defeaturing of a Lens Component

In this workshop, you will import a part into the **3DEXPERIENCE** Platform. The CAD data represent a lens component provided in STP format. After importing the part, you will switch to the Simulation Model Preparation app and de-feature the lens.

After completing this exercise, you will be able to:

- a. Import a neutral format CAD file.
- b. Use the Simulation Model Preparation app to defeature the model



45 minutes

