

# Introduction to ExSight



# About this Course

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## Course objectives

Upon completion of this course you will be able to:

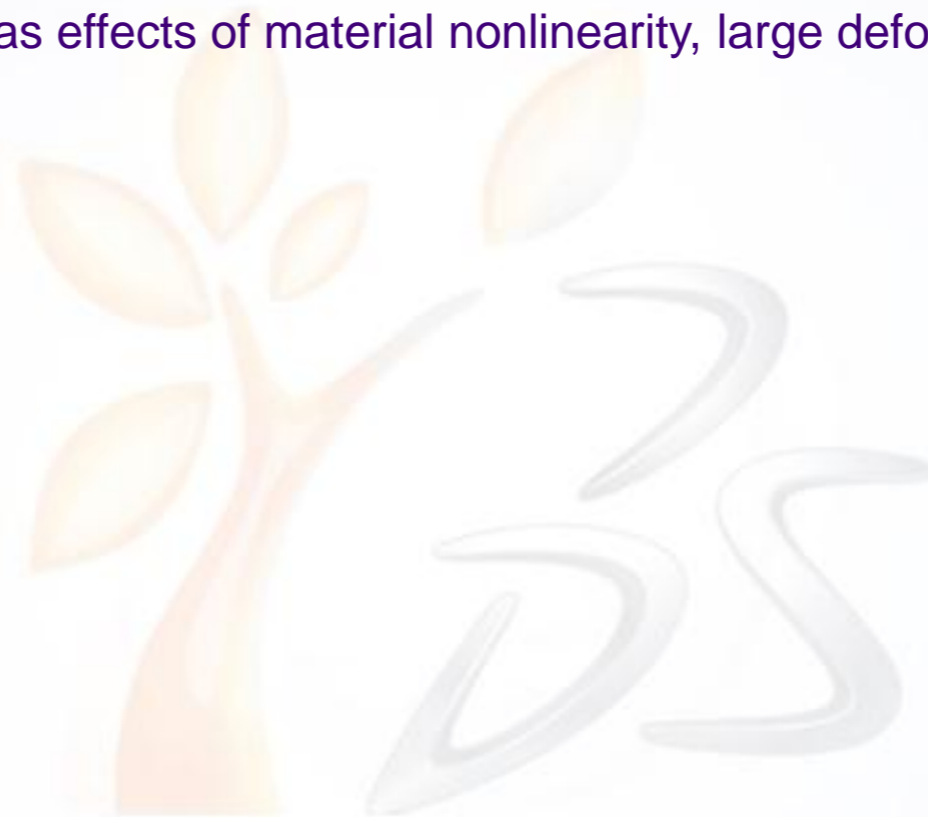
- Create complete Finite Element models
- Run and monitor the simulations
- View and evaluate simulation results
- Perform structural simulations (such as effects of material nonlinearity, large deformation, and contact)

## Targeted audience

Simulation Analysts

## Prerequisites

None



16 hours

# Day 1

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- ▶ Lesson 1            V6 Overview
  
- ▶ Workshop 1        Navigating V6
  
- ▶ Lesson 2            Meshing
  
- ▶ Workshop 2a        Intersecting Pipes – Mesh
- ▶ Workshop 2b        Pump – Mesh
- ▶ Workshop 2c        Reinforced Panel – Mesh
  
- ▶ Lesson 3            Material and Section Properties
  
- ▶ Workshop 3a        Intersecting Pipes – Materials and Section Properties
- ▶ Workshop 3b        Pump – Materials and Section Properties
- ▶ Workshop 3c        Reinforced Panel – Materials and Section Properties
  
- ▶ Lesson 4            Steps and Static Simulations
  
- ▶ Workshop 4a        Intersecting Pipes – Step Definition and Loads
- ▶ Workshop 4b        Intersecting Pipes – Submission and Postprocessing

## Day 2

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- ▶ Lesson 5                    Loads, Restraints and Initial Conditions
  
- ▶ Workshop 5a                Pump – Step Definition and Loads
- ▶ Workshop 5b                Reinforced Panel – Step Definition and Loads
  
- ▶ Lesson 6                    Connections, Interactions and Rigid Bodies
  
- ▶ Workshop 6a                Pump – Connections and Interactions
- ▶ Workshop 6b                Reinforced Panel – Connections, Submission and Postprocessing
  
- ▶ Lesson 7                    Submitting and Postprocessing
  
- ▶ Workshop 7                 Pump – Submission and Postprocessing
  
- ▶ Lesson 8                    Dynamic Simulations
  
- ▶ Workshop 8a                Vibrating Cantilevered Plate
- ▶ Workshop 8b                Forming of a Channel
- ▶ Workshop 8c                Pipe Whip
  
- ▶ Lesson 9                    Heat Transfer
  
- ▶ Workshop 9                 Pump – Thermal Analysis

## Additional Material

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- ▶ Appendix 1      Element Selection Criteria

## Legal Notices

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# Revision Status

Lesson 1	12/12	Updated for R2013x
Lesson 2	12/12	Updated for R2013x
Lesson 3	12/12	Updated for R2013x
Lesson 4	12/12	Updated for R2013x
Lesson 5	12/12	Updated for R2013x
Lesson 6	12/12	Updated for R2013x
Lesson 7	12/12	Updated for R2013x
Lesson 8	12/12	Updated for R2013x
Lesson 9	12/12	New for R2013x
Appendix 1	12/12	Updated for R2013x

Workshop 1	12/12	Updated for R2013x
Workshop 2a	12/12	Updated for R2013x
Workshop 2b	12/12	Updated for R2013x
Workshop 2c	12/12	Updated for R2013x
Workshop 3a	12/12	Updated for R2013x
Workshop 3b	12/12	Updated for R2013x
Workshop 4a	12/12	Updated for R2013x
Workshop 4b	12/12	Updated for R2013x
Workshop 4c	12/12	Updated for R2013x
Workshop 5a	12/12	Updated for R2013x
Workshop 5b	12/12	Updated for R2013x
Workshop 5c	12/12	Updated for R2013x
Workshop 6a	12/12	Updated for R2013x
Workshop 6b	12/12	Updated for R2013x
Workshop 7a	12/12	Updated for R2013x
Workshop 7b	12/12	Updated for R2013x
Workshop 8a	12/12	Updated for R2013x
Workshop 8b	12/12	Updated for R2013x
Workshop 8c	12/12	New for R2013x
Workshop 9	12/12	New for R2013x

# Lesson 1: V6 Overview

## *Lesson content:*

- ▶ What is PLM?
- ▶ What is V6?
- ▶ Working with the V6 Database
- ▶ Connecting to V6
- ▶ Selecting the Security Context and Roles
- ▶ Understanding the V6 User Interface
- ▶ Using the Navigation Tools
- ▶ Exploring the V6 Objects
- ▶ Authoring the Objects
- ▶ Importing and Exporting Data
- ▶ Saving Data
- ▶ Understanding Simulation Workbenches in V6
- ▶ Working with the ExSight Workbenches
- ▶ Understanding the Simulation Capabilities in ExSight
- ▶ Understanding Conventions in ExSight
- ▶ Workshop 1



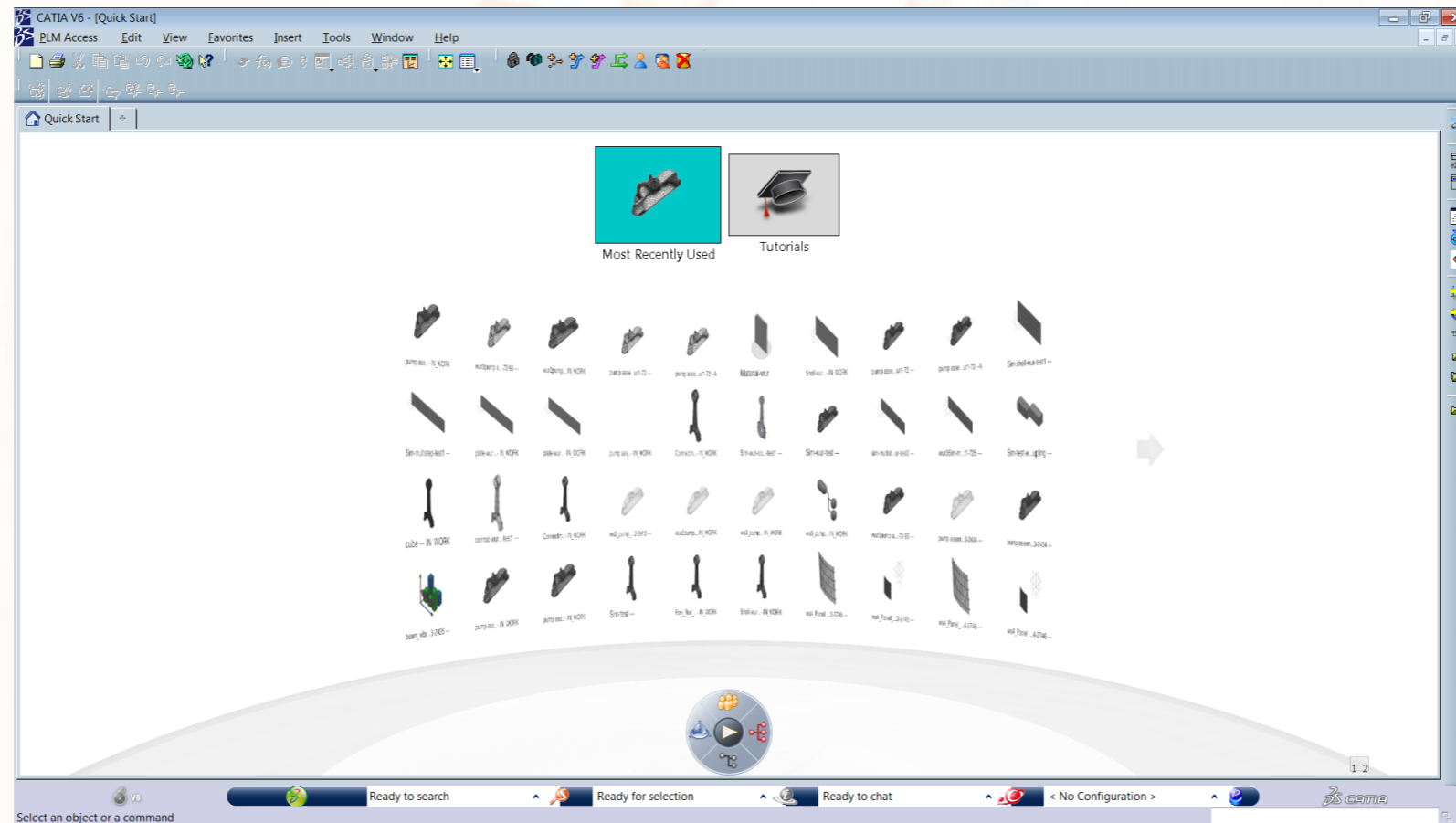
**1 hour**



# Workshop 1: Navigating through V6

In this workshop you will learn to navigate through the V6 platform. After completion of this exercise, you will be able to:

- Connect to a V6 database
- Use basic V6 navigation tools



**30 minutes**

# Lesson 2: Meshing (1/2)

## *Lesson content:*

- ▶ Introduction to Meshing in V6
- ▶ Workflow Overview
- ▶ Creating a New Finite Element Model Representation
- ▶ The Advanced Meshing Workbench Layout
- ▶ Generating Meshes in ExSight
- ▶ The Octree Meshers
- ▶ Creating Octree Tetrahedron Meshes
- ▶ Creating Octree Triangle Meshes
- ▶ Creating Surface Meshes
- ▶ Working with the Surface Mesher
- ▶ Using the Surface Rules Mesher
- ▶ More on Creating 3D Solid Meshes
- ▶ Generating Sweep 3D Meshes
- ▶ Creating Tetrahedron Filler Meshes



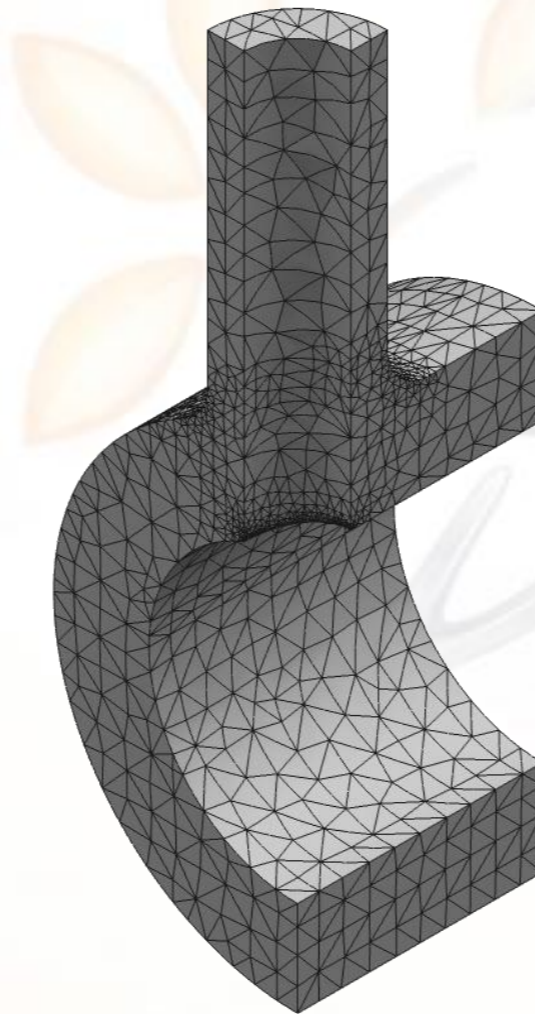
**1 hour**

## Workshop 2a: Intersecting Pipes – Mesh

In this workshop, you will create a good quality tetrahedral mesh on the three-dimensional intersecting pipe model.

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

- a. Open the ExSight workbench and create a Finite Element Model Representation
- b. Create a good quality tetrahedral mesh on a solid geometry



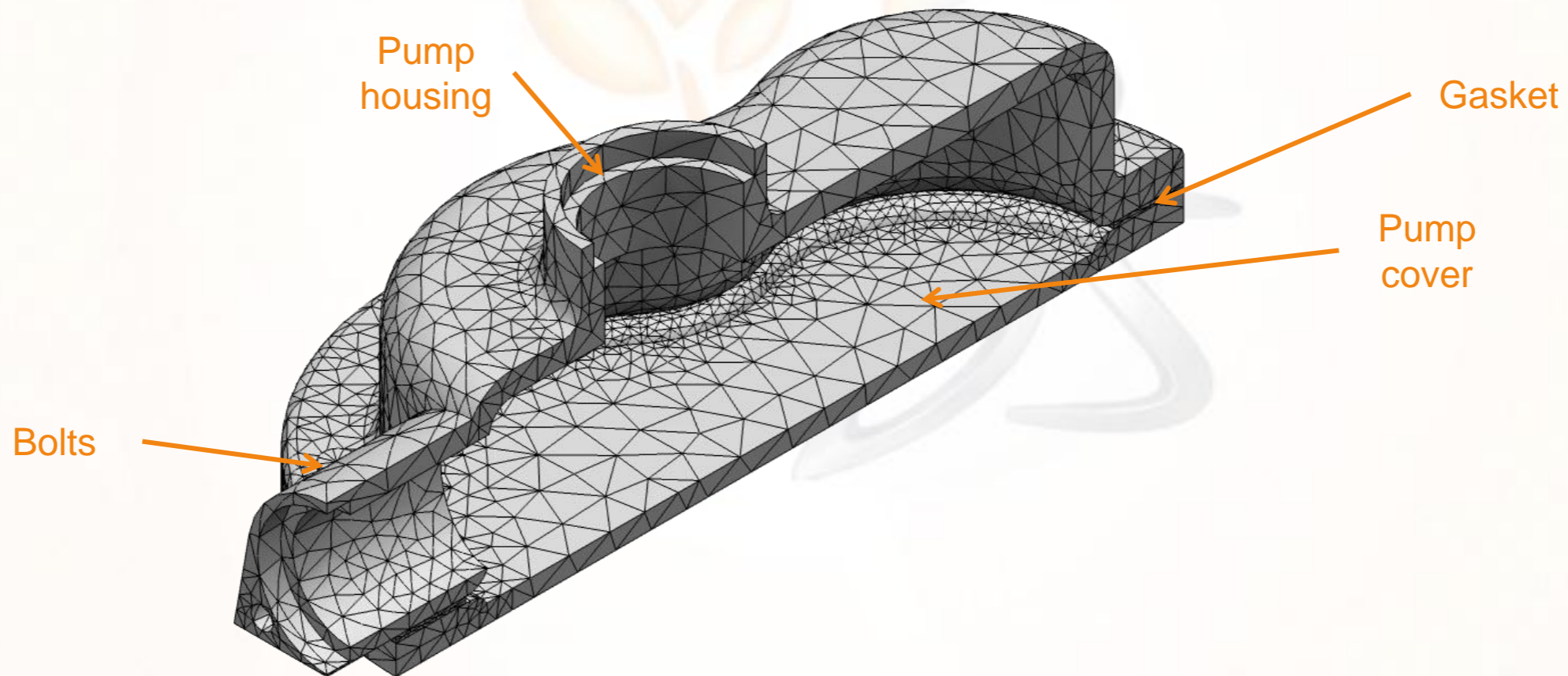
**20 minutes**

## Workshop 2b: Pump – Mesh

In this workshop you will create a Finite Element Mesh Representation for the pump assembly. You will mesh each part with tetrahedral elements.

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

- Create an ExSight simulation for a CATIA Product
- Create a Finite Element Mesh Representation
- Mesh the different parts of an assembly with tetrahedral elements



**30 minutes**

