

Introduction to ExSight



About this Course

Course objectives

Upon completion of this course you will be able to:

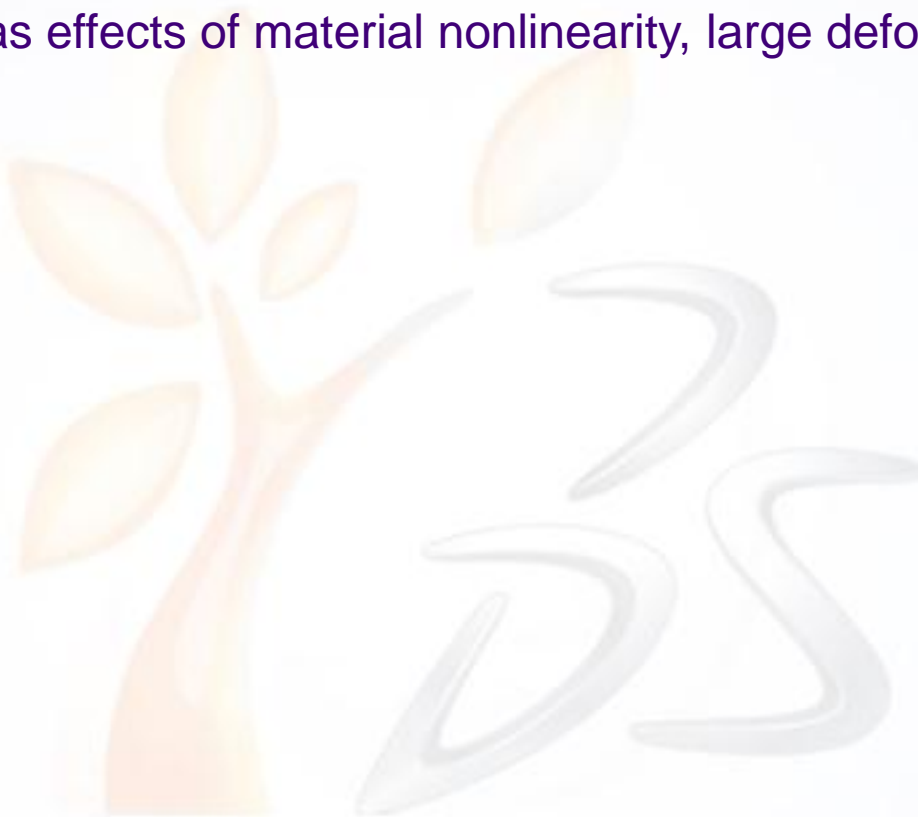
- Create complete Finite Element models
- Run and monitor the simulations
- View and evaluate simulation results
- Perform structural simulations (such as effects of material nonlinearity, large deformation, and contact)

Targeted audience

Simulation Analysts

Prerequisites

None



Day 1

- ▶ 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

- ▶ 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

- ▶ Appendix 1 Element Selection Criteria

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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

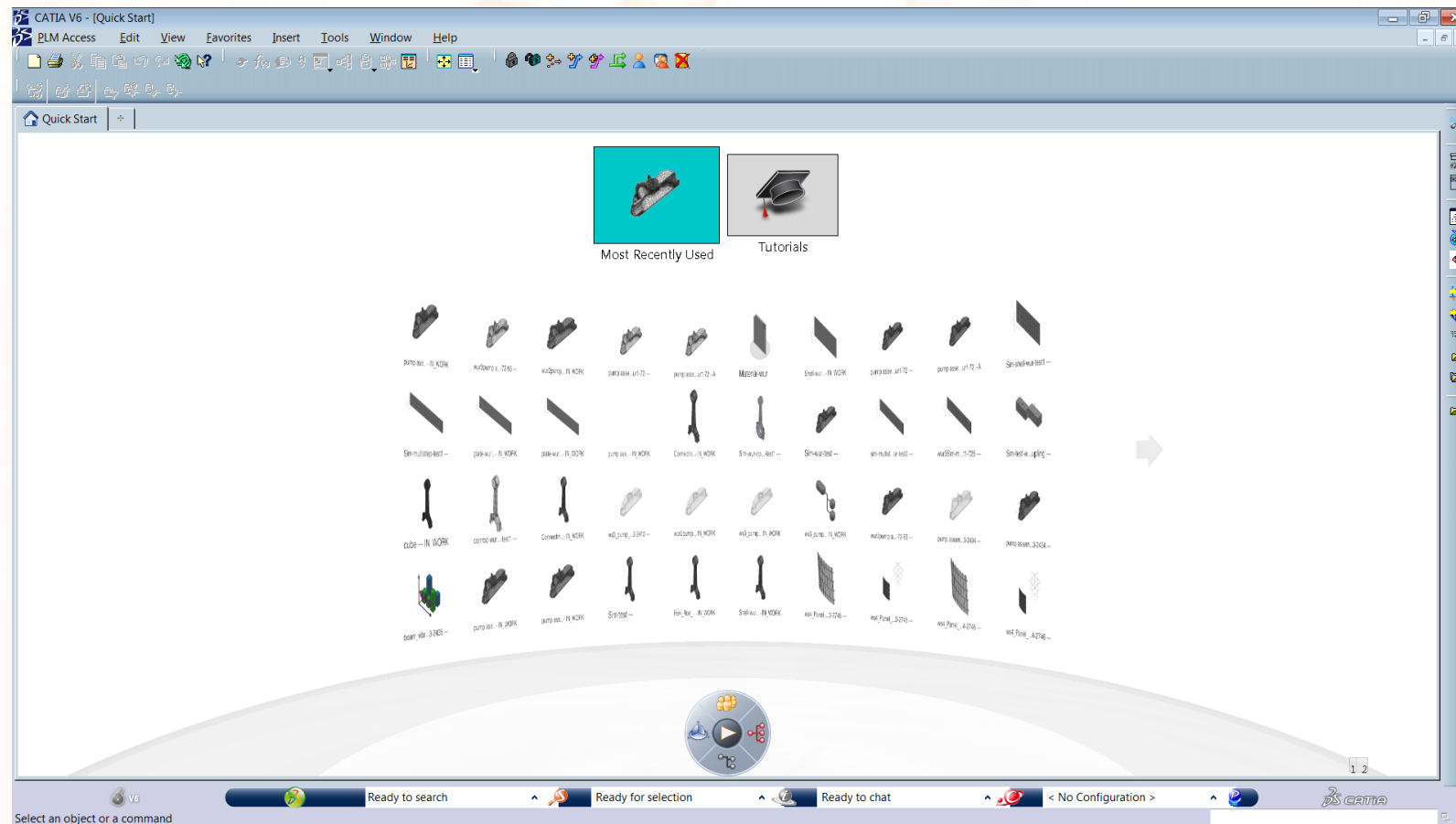


1 hour

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



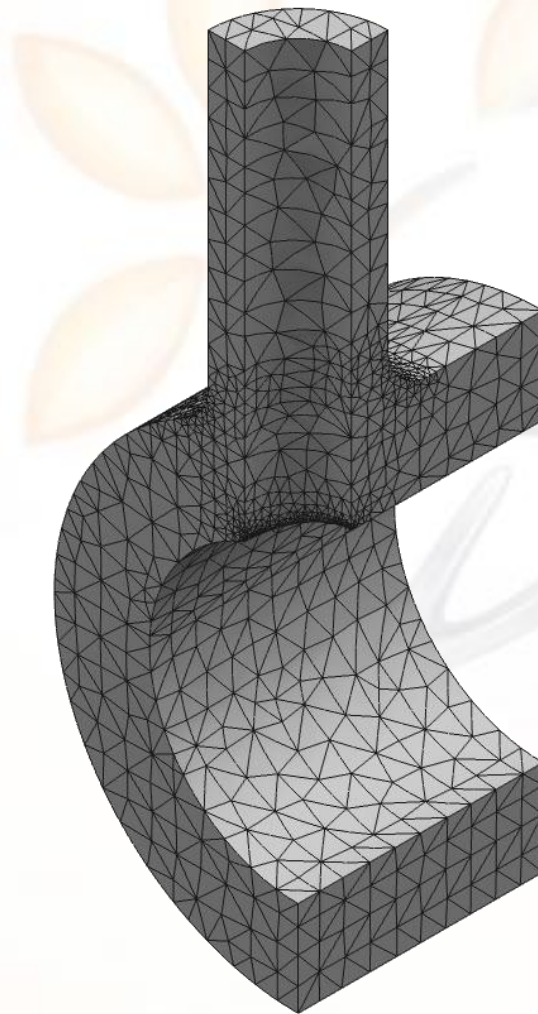
1 hour

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



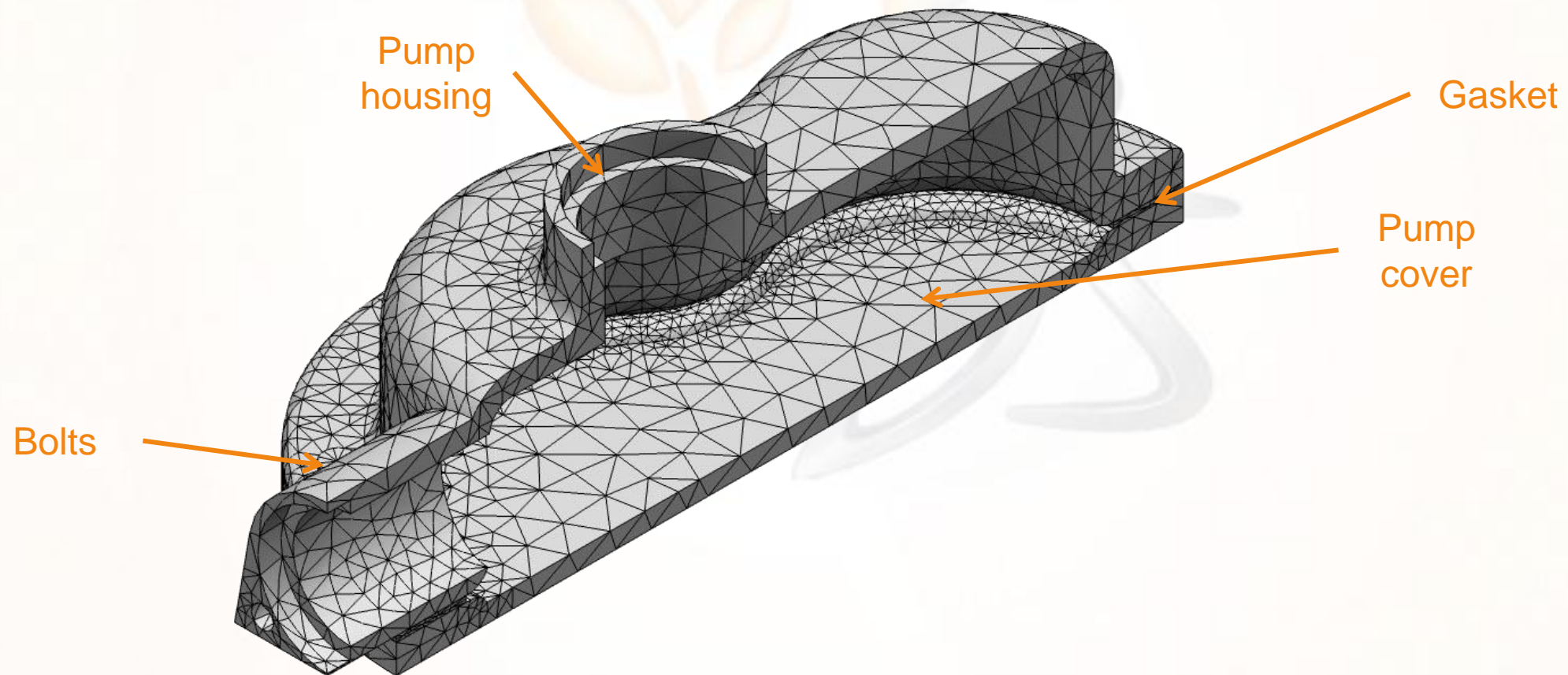
20 minutes

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

