

Introduction to ExSight



About this Course

Course objectives

Upon completion of this course you will be able to:

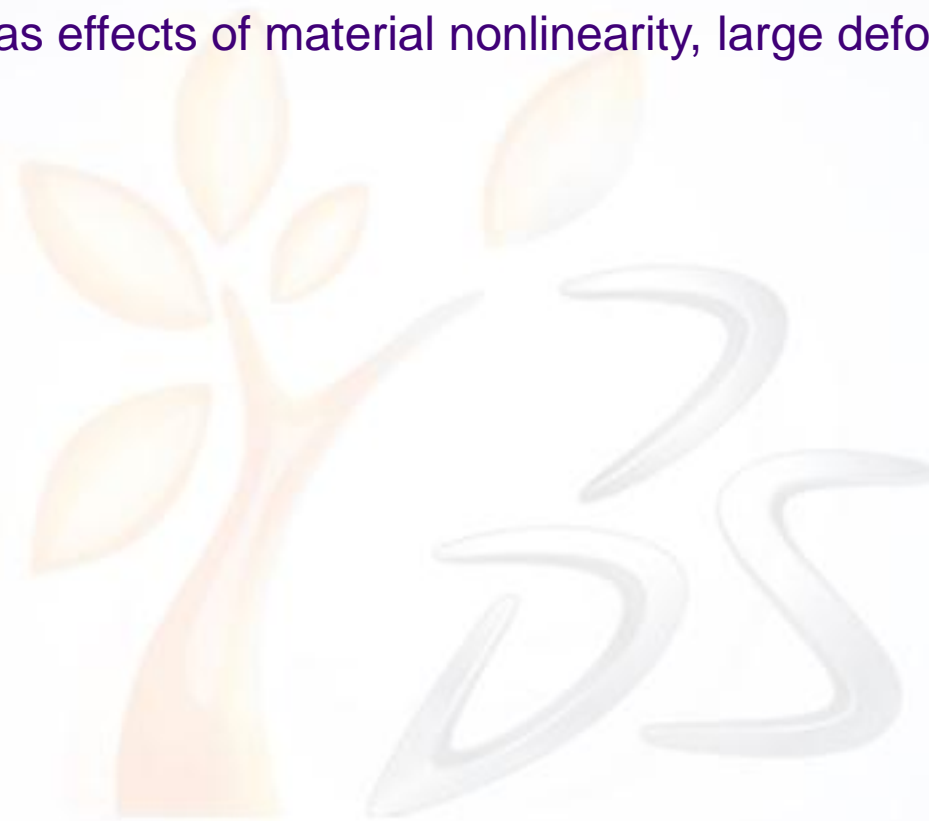
- Create complete Finite Element models
- Run and monitor the simulations
- View and evaluate simulation results
- Perform structural simulations (such as effects of material nonlinearity, large deformation, and contact)

Targeted audience

Simulation Analysts

Prerequisites

None



16 hours

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

Legal Notices

The Software described in this documentation is available only under license from Dassault Systèmes and its subsidiary and may be used or reproduced only in accordance with the terms of such license.

This documentation and the software described in this documentation are subject to change without prior notice.

Dassault Systèmes and its subsidiaries shall not be responsible for the consequences of any errors or omissions that may appear in this documentation.

No part of this documentation may be reproduced or distributed in any form without prior written permission of Dassault Systèmes or its subsidiary.

© Dassault Systèmes, 2012.

Printed in the United States of America

ExSight, the 3DS logo, SIMULIA and CATIA are trademarks or registered trademarks of Dassault Systèmes or its subsidiaries in the US and/or other countries.

Other company, product, and service names may be trademarks or service marks of their respective owners. For additional information concerning trademarks, copyrights, and licenses, see the notices at: <http://www.3ds.com/products/simulia/portfolio/product-os-commercial-programs>.

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

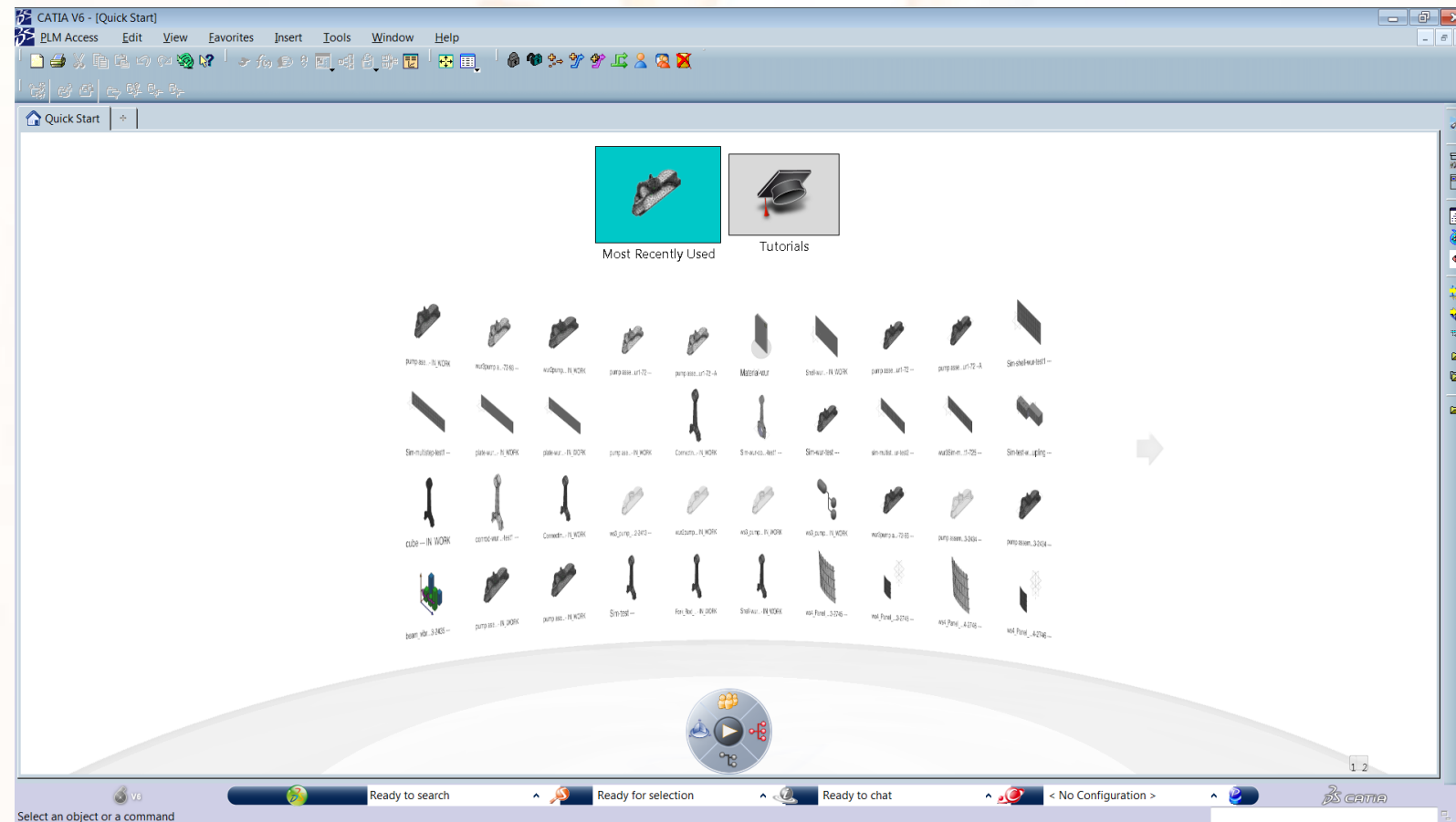


1 hour

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



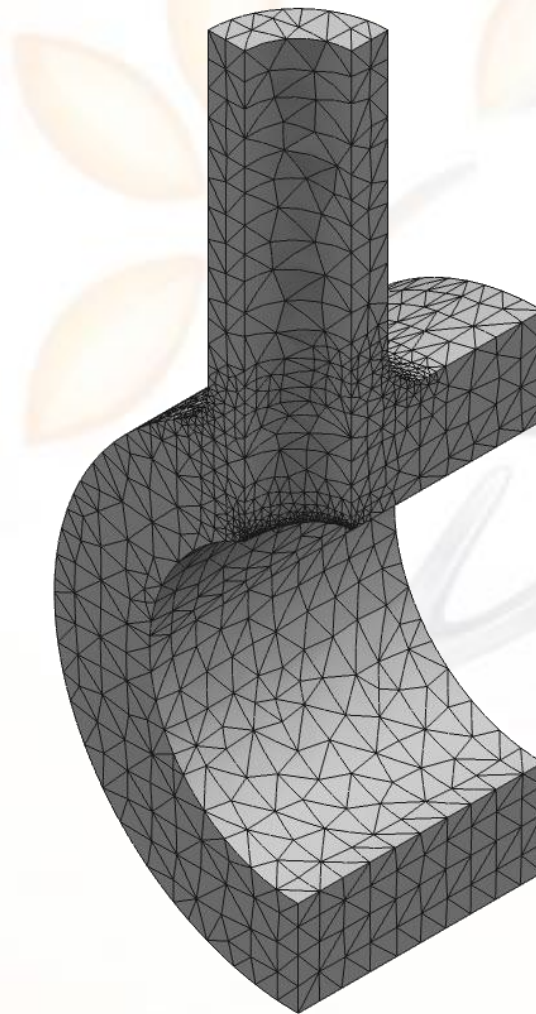
1 hour

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



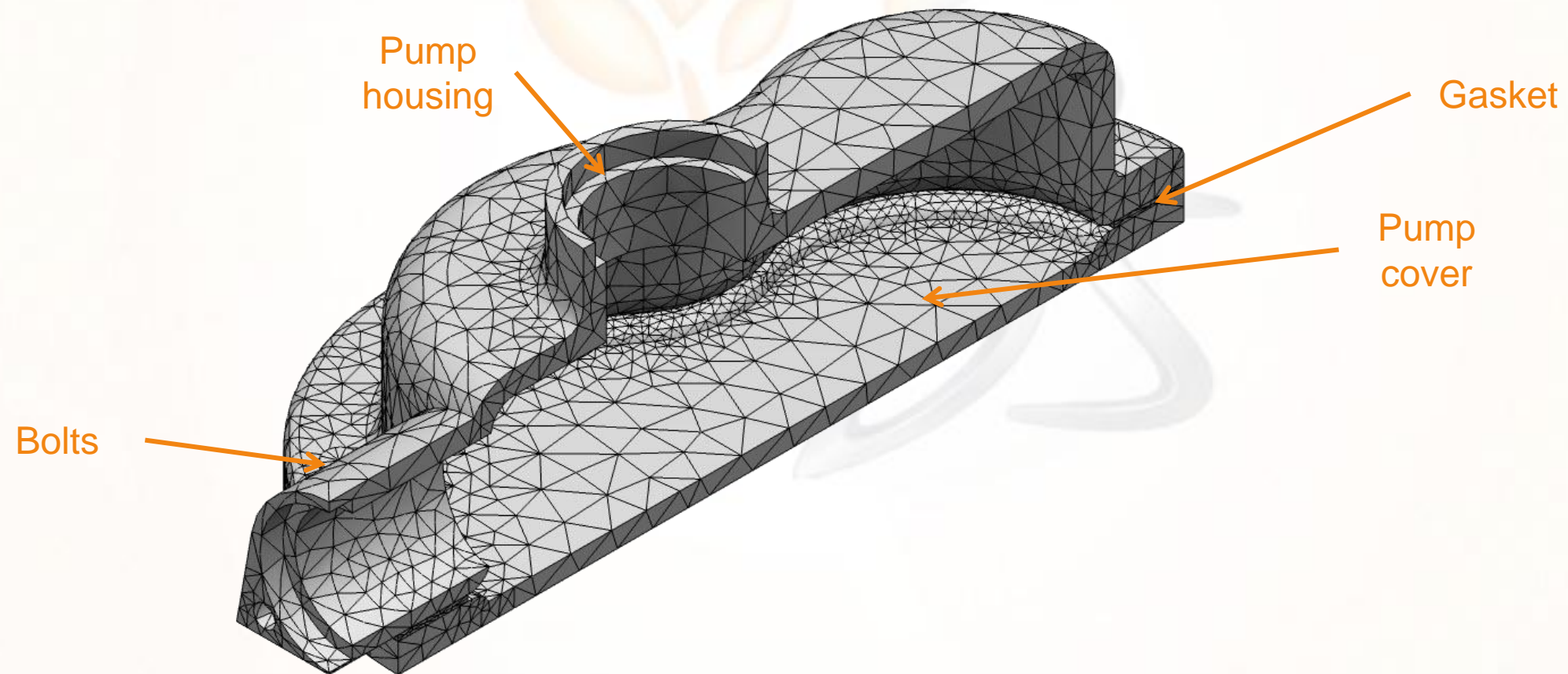
20 minutes

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

