

# MECHANICS MODELING

Overview

# DAY 1

- Lecture 1 Introduction to Mechanical Modeling and Libraries
  - Workshop 1 Introduction to MSL Mechanics
- Lecture 2 Working with MSL Translational and Rotational Library
  - Workshop 2 Working with MSL 1-D Libraries
- Lecture 3 Working with MSL MultiBody Dynamics Library
  - Workshop 3 Using the MultiBody Dynamics Library
- Lecture 4 Advanced MultiBody Topics – Implementing components
  - Workshop 4 Creating equation based components



# **MECHANICS MODELING**

Introduction to Mechanical Modeling and Libraries



# OVERVIEW

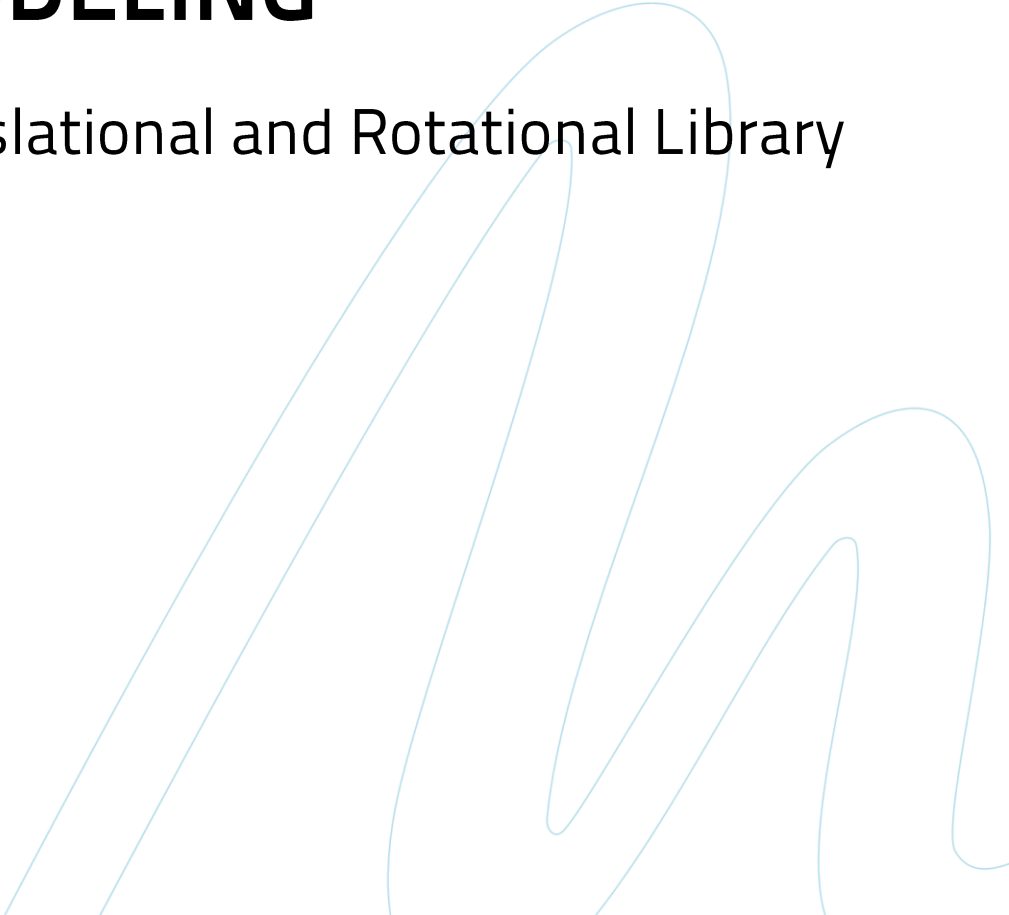
- Overview of available libraries for mechanics modelling
- Modelica.Mechanics
  - Rotational
  - Translational
  - MultiBody

## Workshop 1

- Getting familiar with the Modelica.Mechanics libraries

# MECHANICS MODELING

Working with MSL Translational and Rotational Library



# OVERVIEW

- Basic components
  - Sign convention and implications
  - Force and torque balance
  - Flipping components
- Component implementation

## Workshop 2

- Rotational and translational systems
- Cable winder and elevator



# **MECHANICS MODELING**

Working with MSL MultiBody Dynamics Library



# OVERVIEW

- Connector definition
  - Representation of position and orientation
- Closing a loop
  - Branch functions
  - Connection graphs
  - Assemblies
- Graphics
  - Primitives, Visualizers, Post-processing

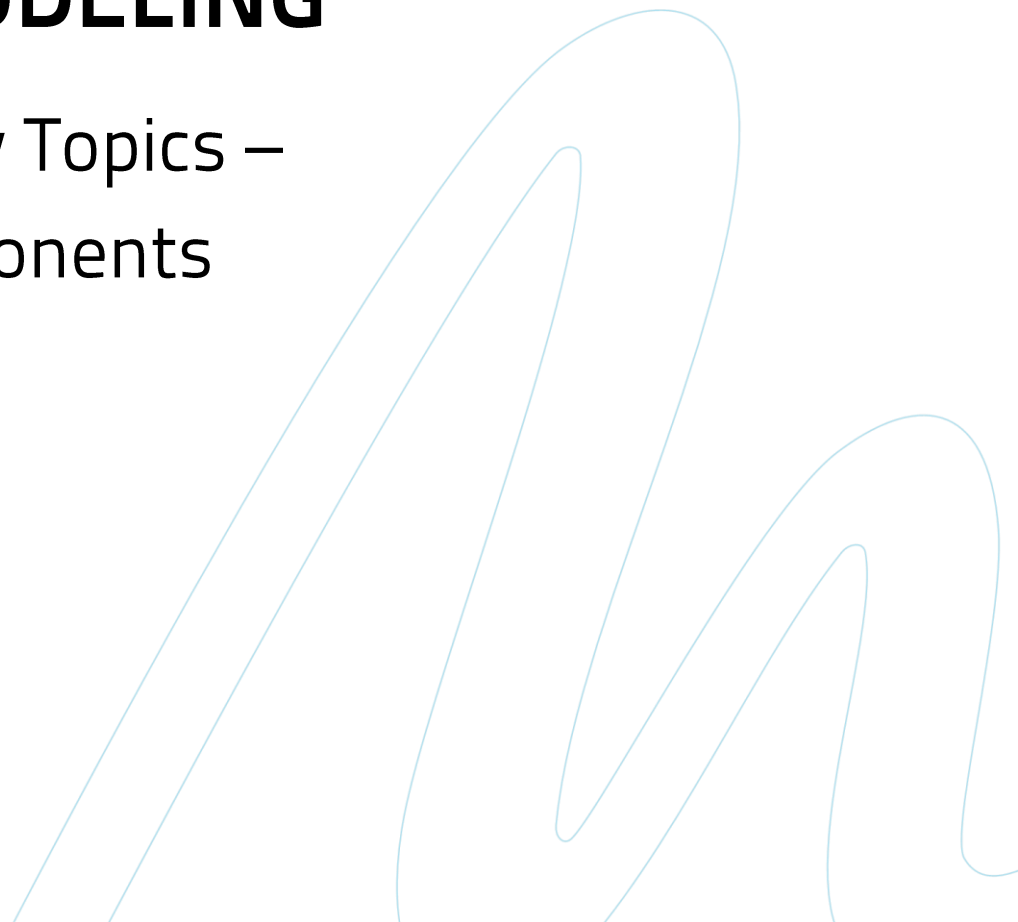
## Workshop 3

- Slider crank
- Crane



# **MECHANICS MODELING**

Advanced MultiBody Topics –  
Implementing components



# OVERVIEW

## Creating Multi-body components

- Connector relations
- Examples
- Using Frame functions

## Workshop 4

- Creating a screw joint based on primitives
- Creating a screw joint with Modelica code

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