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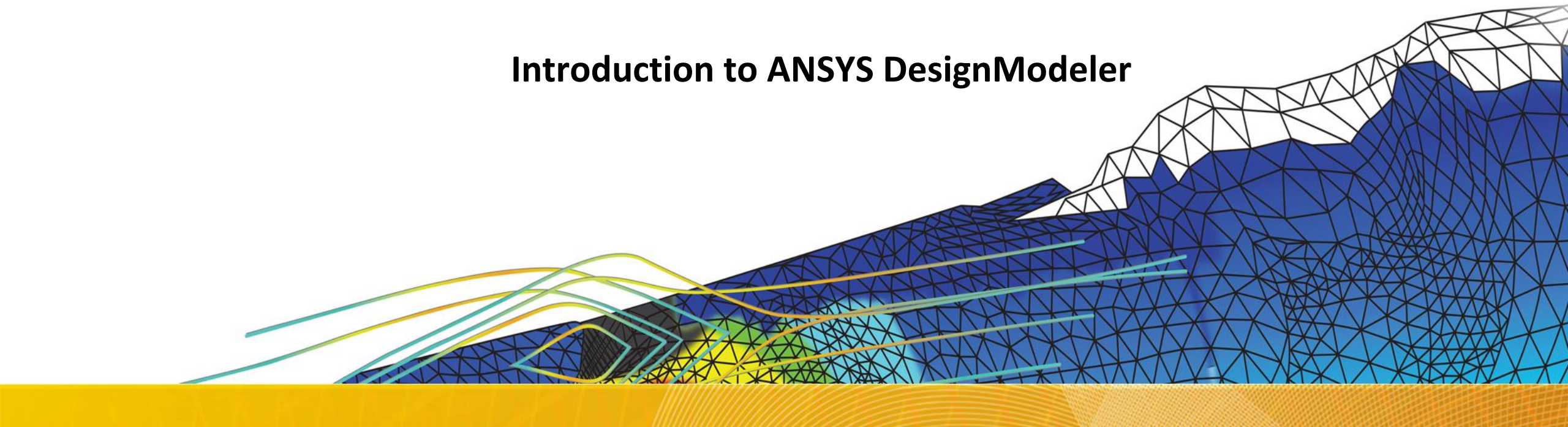
17.0 Release

Module 04: Parameterization

Introduction to ANSYS DesignModeler

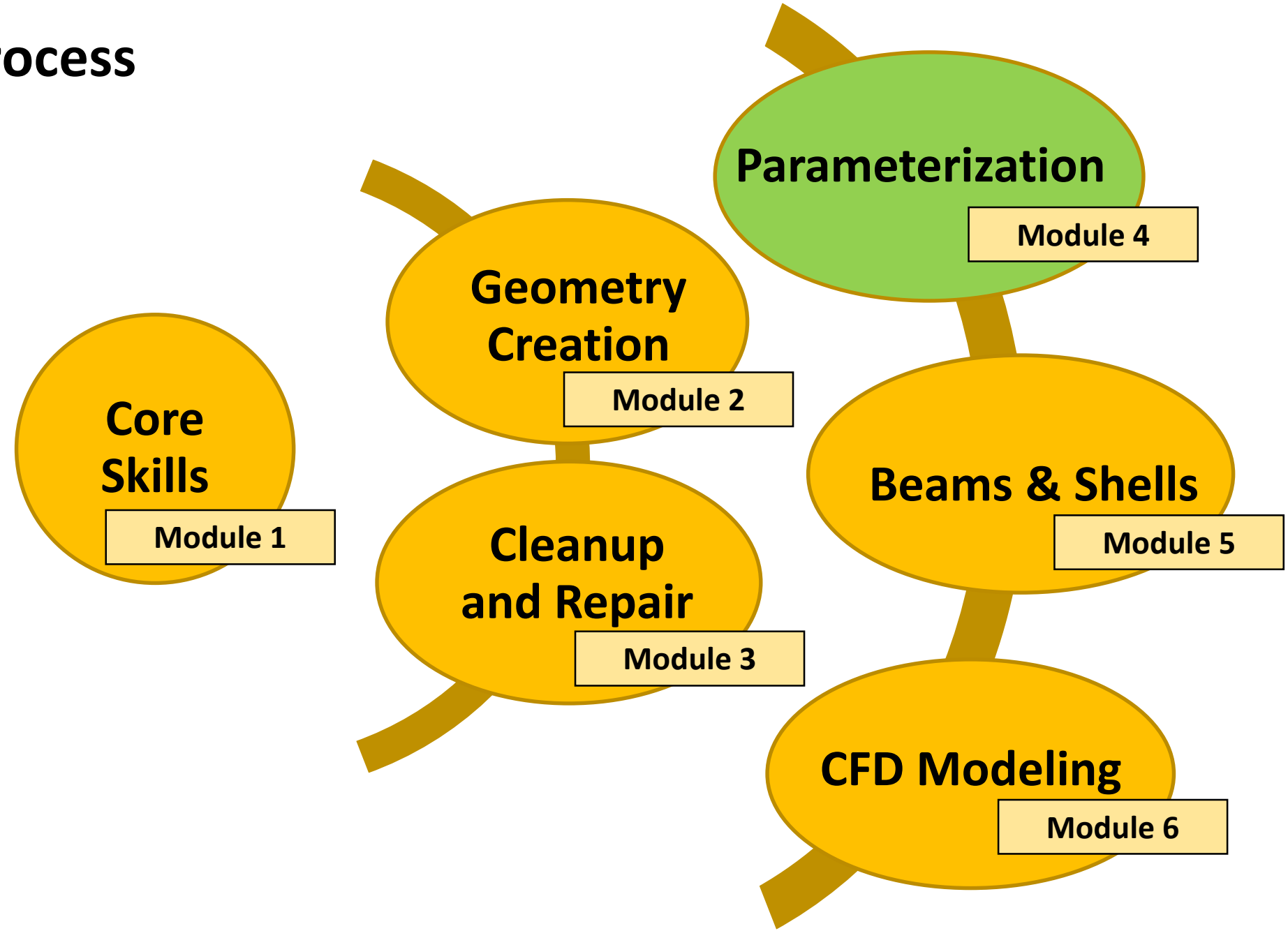


Overview

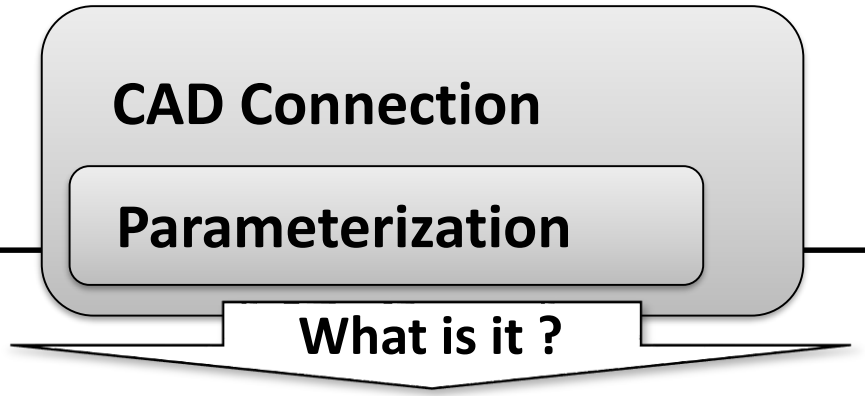
In this lecture we will learn about:

- Import Methods for CAD Connections
- Uni/Bi-Directional Connectivity
- Parameters handling

Overall Process



CAD Connections and Parameterization



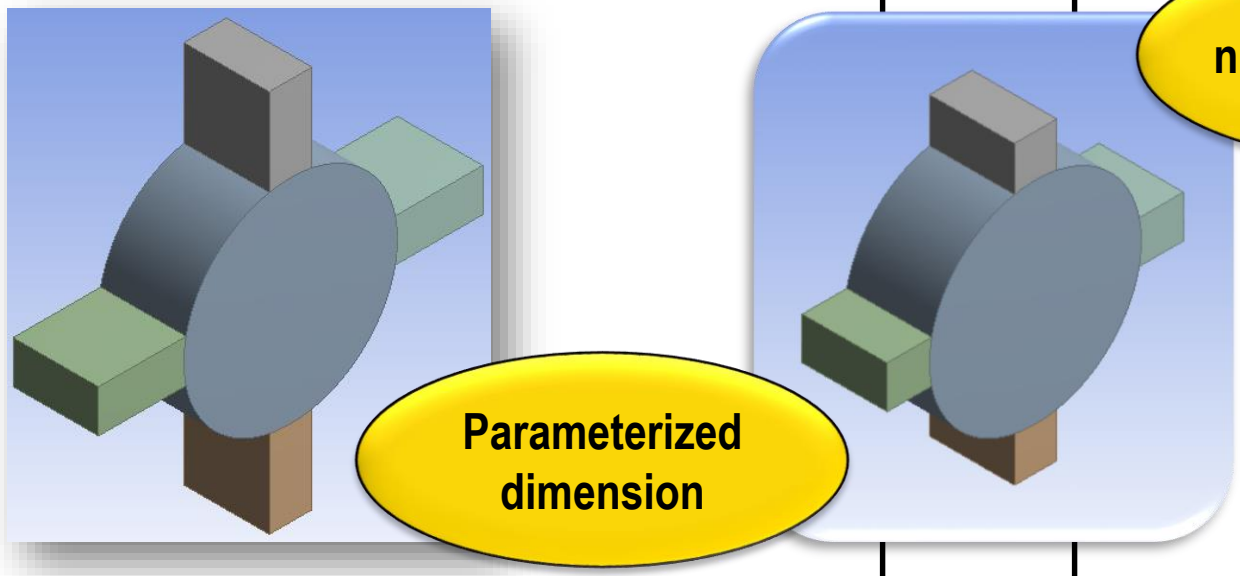
- Helps execute a set of operations repeatedly with different input values
- Useful for analyzing multiple design points
  - By modifying geometry/topology parameters
- Parameters can be either used for :
  - Sketch dimensions, Plane creation inputs, 3D operation values, etc.
- Parameters can be linked with each other through expressions
  - Defined in Design Modeler or Workbench
- Parameters can be controlled from Workbench
  - No need for Design Modeler to be opened

Types of Parameters

Geometric parameters

Changes the dimensions or locations of a given feature

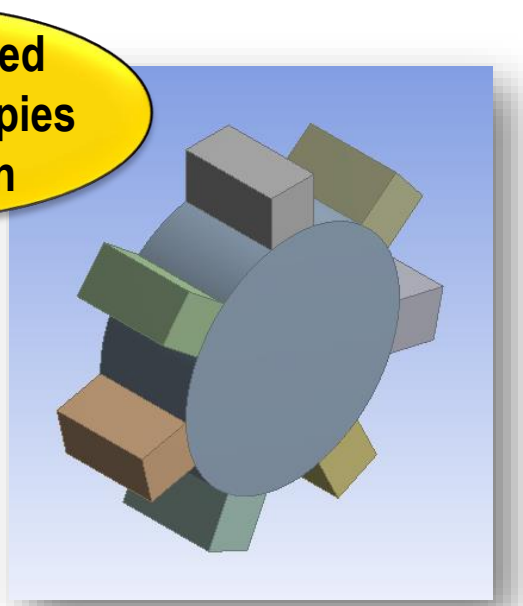
- Does not necessarily change the total number of entities in the model



Topological parameters

Modifying the feature itself by adding or removing geometry

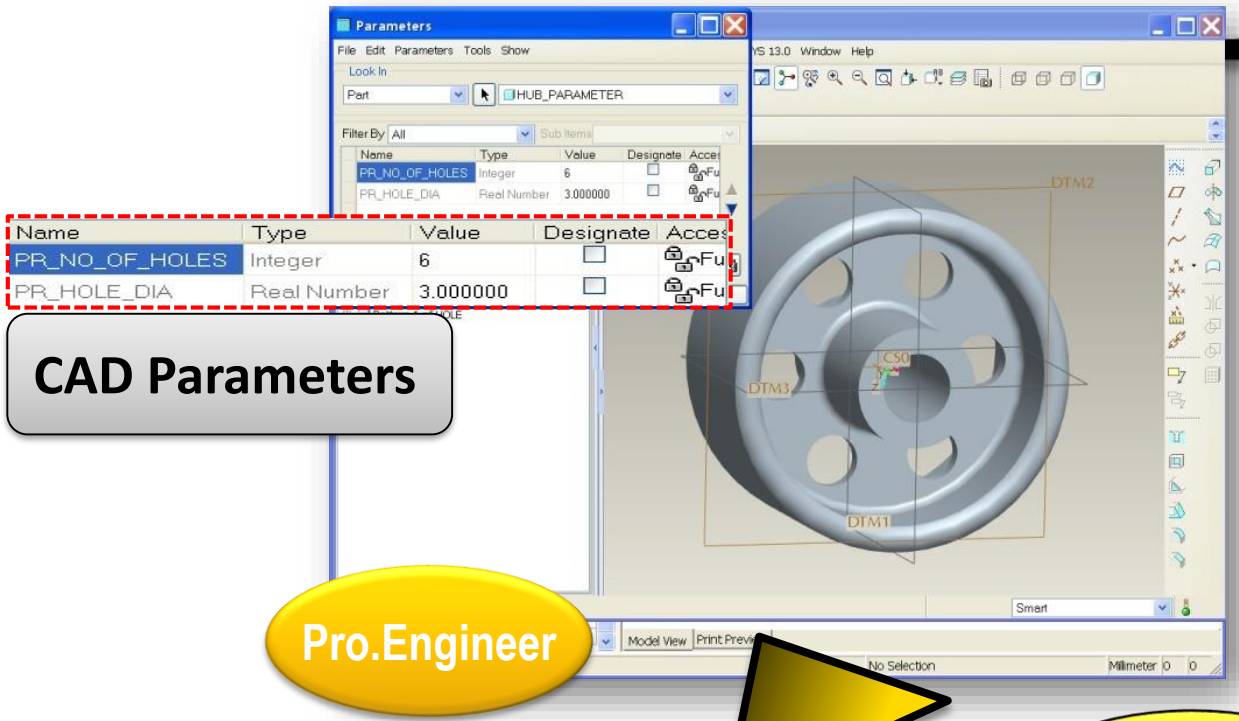
- Can change total number of entities in the model



Bi-directional CAD Connectivity & Parameters

Parameters

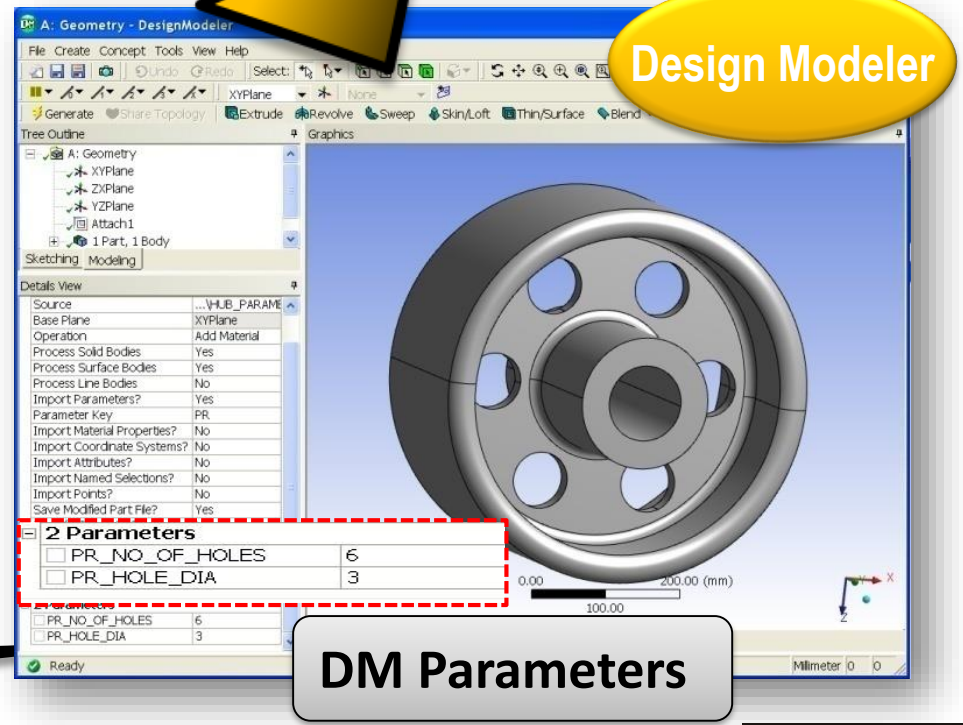
- Hole diameters
- Number of holes



CAD Parameters

Pro.Engineer

Parameters from CAD to WB



Design Modeler

Parameters from WB to CAD

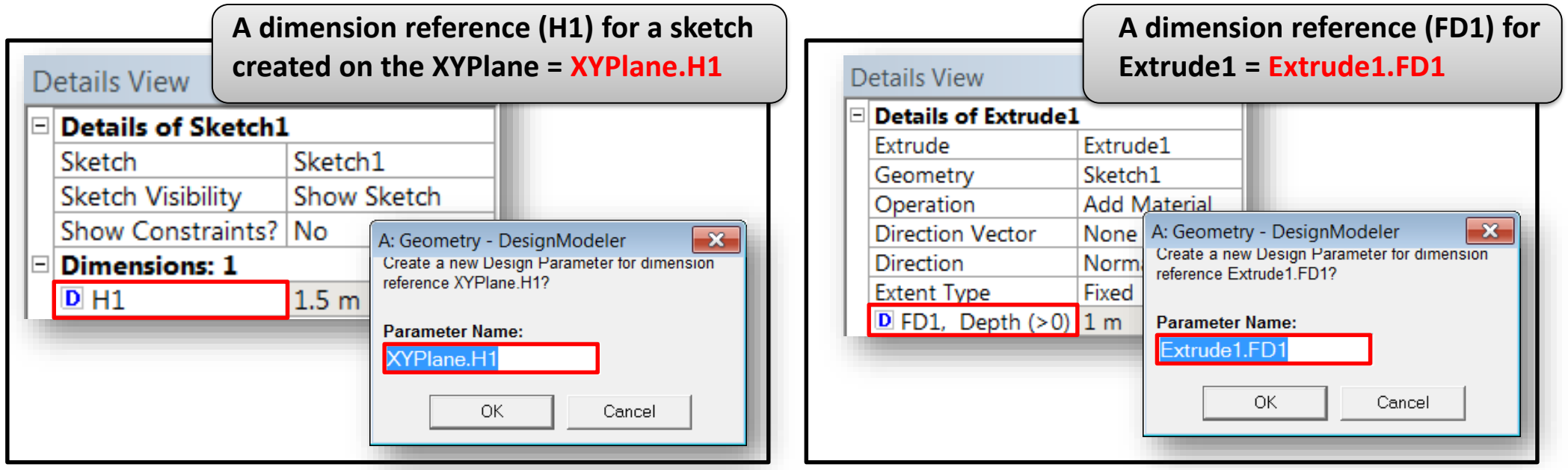
DM Parameters

Creating Parameters in DesignModeler

Procedure

- Any input prefixed with the "□" symbol can be parameterized
  - Toggle "□" to "D" to parameterize that particular input
- Default Parameter Name Pattern
  - Feature Name.Dimension Reference
- Parameter name can be changed

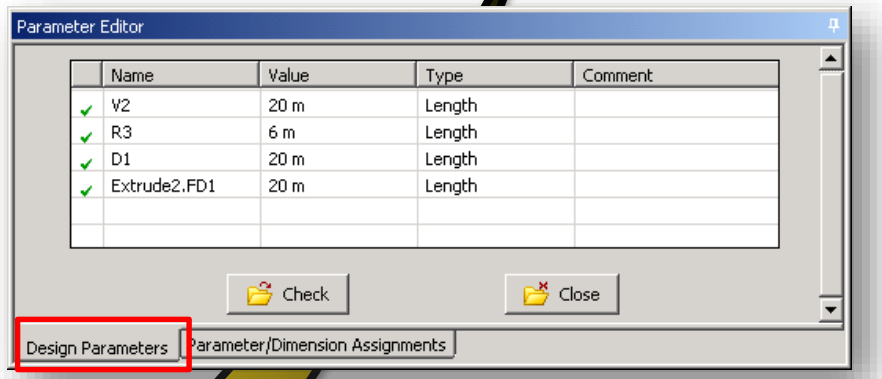
Example:

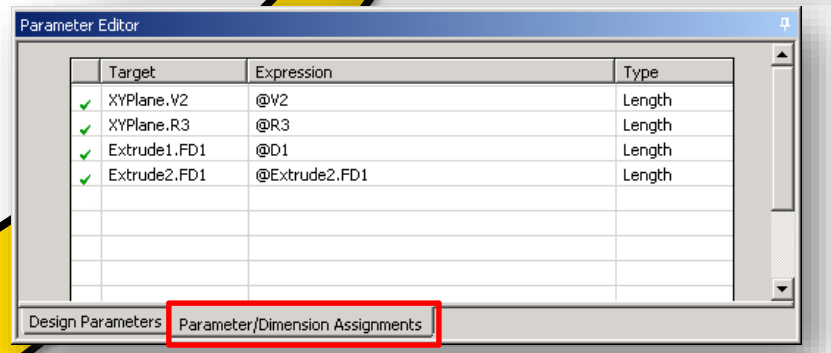


Parameter Manager

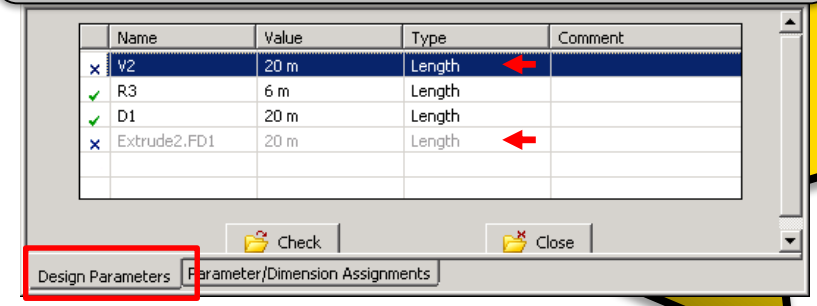
Accessible from the Toolbar or Tools menu

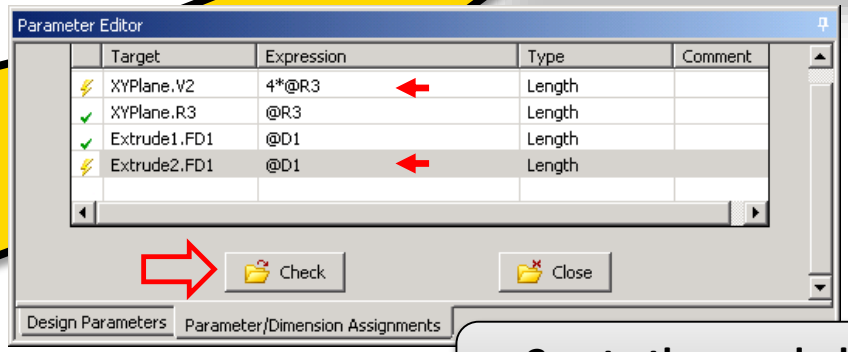
- Design Parameters tab
  - List the existing parameters & assigned values
- Parameter/Dimension Assignments tab
  - Contains expressions
    - relating the original dimension reference to the value set in the Design Parameters tab





This 2 defined parameters become obsolete and can be suppressed (or deleted)



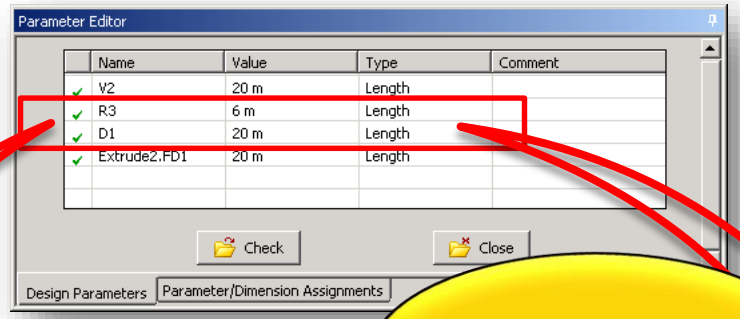


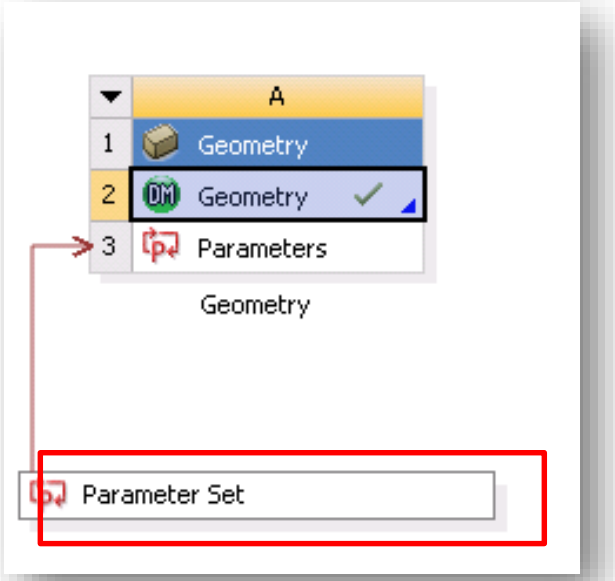
Create the needed expressions & "Check" to evaluate them

Parameter Manager

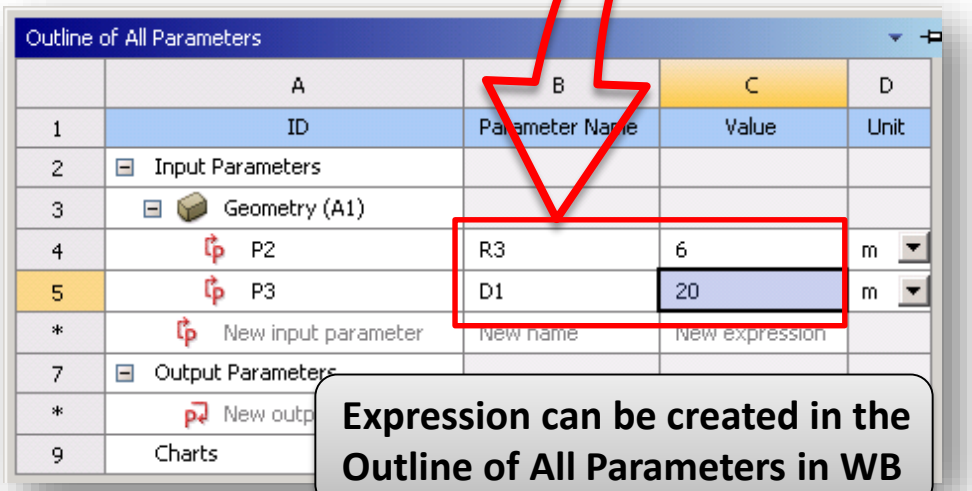
Parameters created in Design Modeler can be managed in:

- **Parameter Editor in DM**
- **Parameter Set in WB**

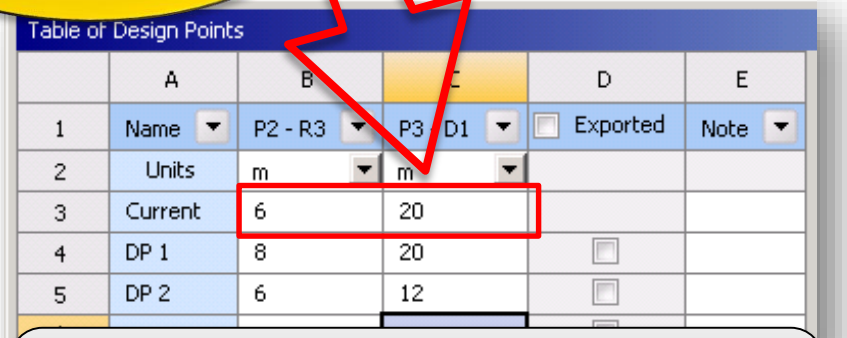




Linked together & Updated in background



Expression can be created in the Outline of All Parameters in WB



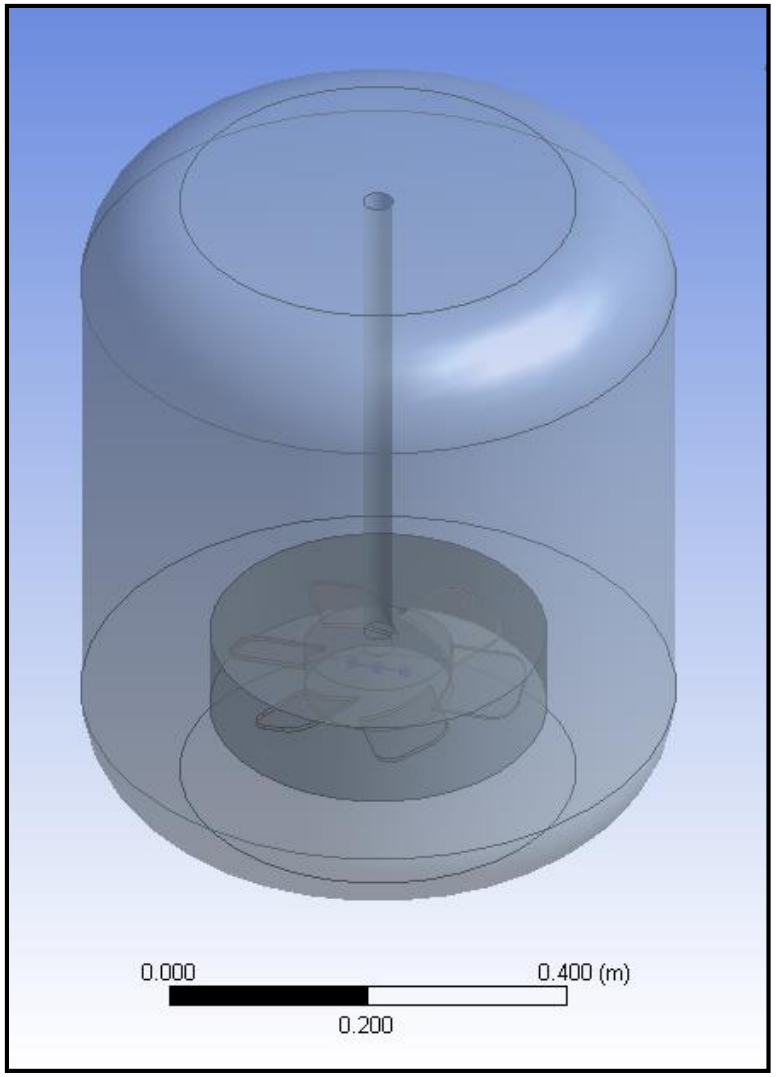
Multiple Design Points can be created using different values of the parameterized independent variable

Summary

What have we learnt in this session?

- Import Methods
- CAD Connections
- Parameters

Workshop 4.1_CFD – Parametric Mixing Tank



Workshop 4.1_FEA – Automotive AERO