

Introduction

With all of its powerful feature creation tools, solid modeling is not capable of capturing the complex shapes. To capture such complex shapes, surface modeling techniques are widely used.

A model that can be created using solid modeling technique can also be created by using the surface modeling techniques. The model built using surfaces is more adaptable to the changes that are incorporated during later stage of product development. Therefore surface modeling is not only used for building complex geometry but also to make the modeling process more adaptable.

In surface modeling datum curves are of great importance. Most of the surfaces are built around datum curves. So surface modeling requires good skills to build datum curves.

Creo Parametric has mainly two modules for building surface; SURFACE and ISDX. ISDX is used for building free form surfaces. In this text we will learn to create the parametric surfaces using SURFACE module.

These tutorials are divided into following sections

1. Basics of Surface Modeling
2. Building Datum Features
3. Surface Quality
4. Examples

Importance of Accuracy in Creo Parametric

Accuracy determines the smallest distance between two entities. These entities may be points, edges or surfaces. So lesser the value of accuracy more detailed items can be represented in Creo. We can also say that accuracy is the smallest size (measured in the current units) that Creo can recognize.

But as we decrease the value of accuracy (i.e. increase the accuracy) regeneration time of the model increases. It also results in increased memory usage and file size.

There are two methods of specifying accuracy in Creo

1. Relative accuracy
2. Absolute accuracy

Relative accuracy relates the level of detail in a model to its overall size. It is based on the assumption that the smaller models require more detailed work and vice versa. When the accuracy is set to relative, system determines the accuracy value fore each step of a part's creation. As the part's size is increased it will calculate a new value for accuracy and uses it from that point on for all geometry related calculation. So the features created at start and at end of the model usually have different accuracy. For example we create feature No. 30 as a surface copy of feature No.5. These two surfaces will not be geometrically equal because both features were created at different accuracy.

When a part's accuracy is set to **absolute accuracy** then its limits or size has no effect on the parts accuracy and therefore all new features are created at the same accuracy level. The value

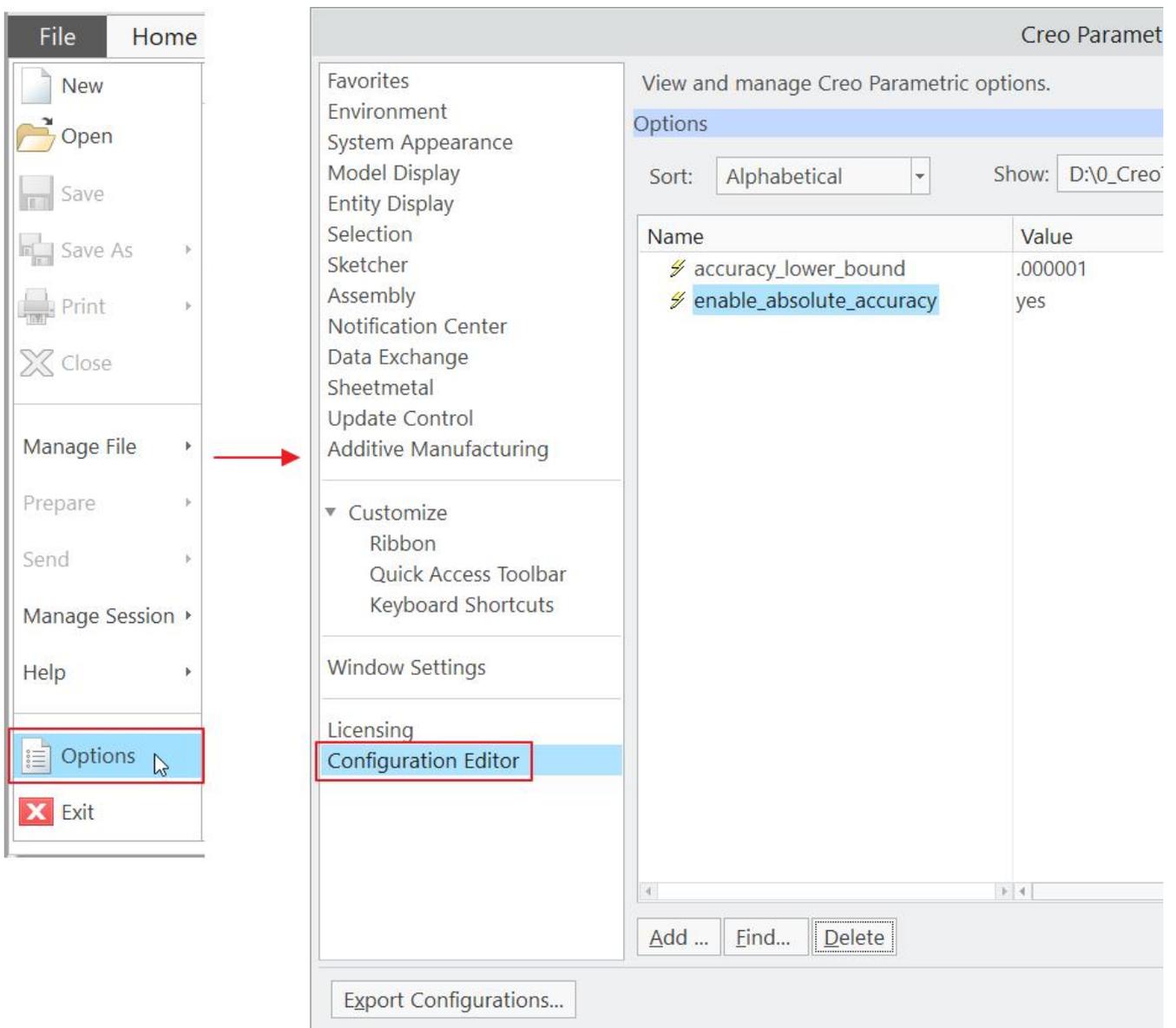
specified for the absolute accuracy is used as the actual accuracy for all the features of the model.

Before Starting the Creo

1. Before starting any session of Creo , it is recommended to set the following Configuration file options

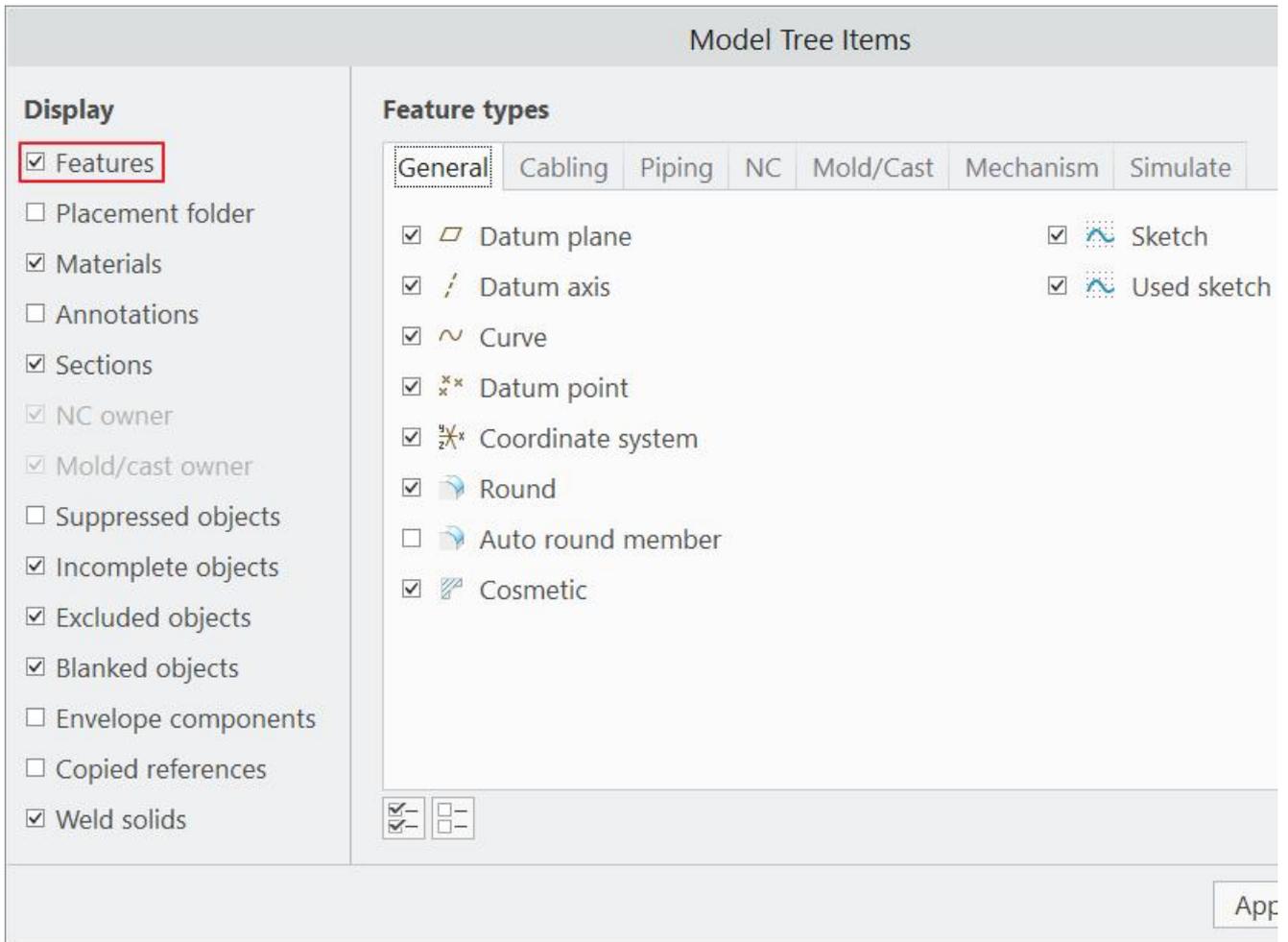
enable_absolute_accuracy Yes

accuracy_lower_bound 0.000001

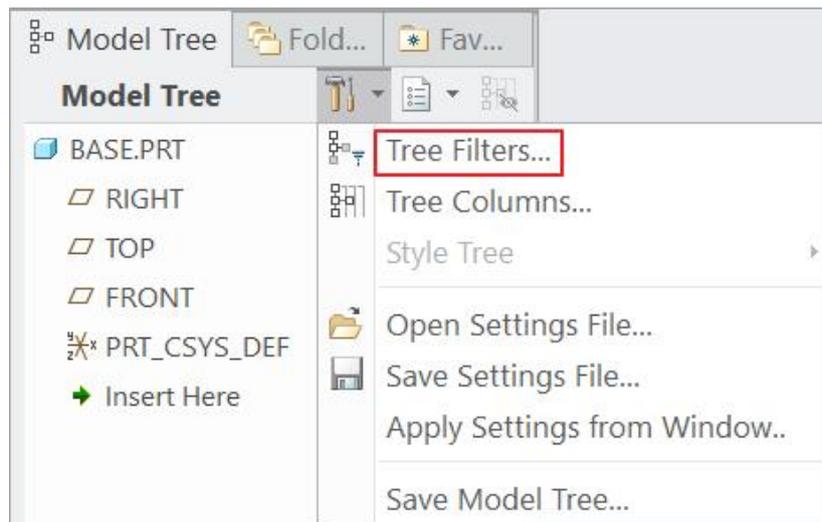


accuracy_lower_bound value is used to override the default lower accuracy limit of 0.0001

2. To display the features in the Model Tree, make sure that Features option is checked in Model Tree Items dialog box.



This dialog box can be accessed at



Displaying the features in the Model Tree is necessary as most of the work will consist of creating features.

Note: The background and geometry are shown in different colors compared to the default system colors in Creo 4.0.