Final Project & Rendering

Aalto University
School of Engineering

Kaur Jaakma

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Voluntary Exercises in MyCourses

Creo with integrated Mathcad

- Calculating displacement with integrated Mathcad and comparing results with Creo FEM results
- Mathcad has to be installed on the same computer (mfavdi)

Surface modeling with Creo

- Creating a shampoo bottle using surfaces
- Reflection analyze in the picture here

Final Project (1/2)

Exercise 6.1 – Ball valve

- 5-10 different parts
- Needs to work like a real ball valve
  - Parts are attached to each other with screws, bolts etc.
  - No overlapping geometries
  - Possible to assemble
- Simplifying possible (hole threats etc.)
- Mechanism connection to open/close valve

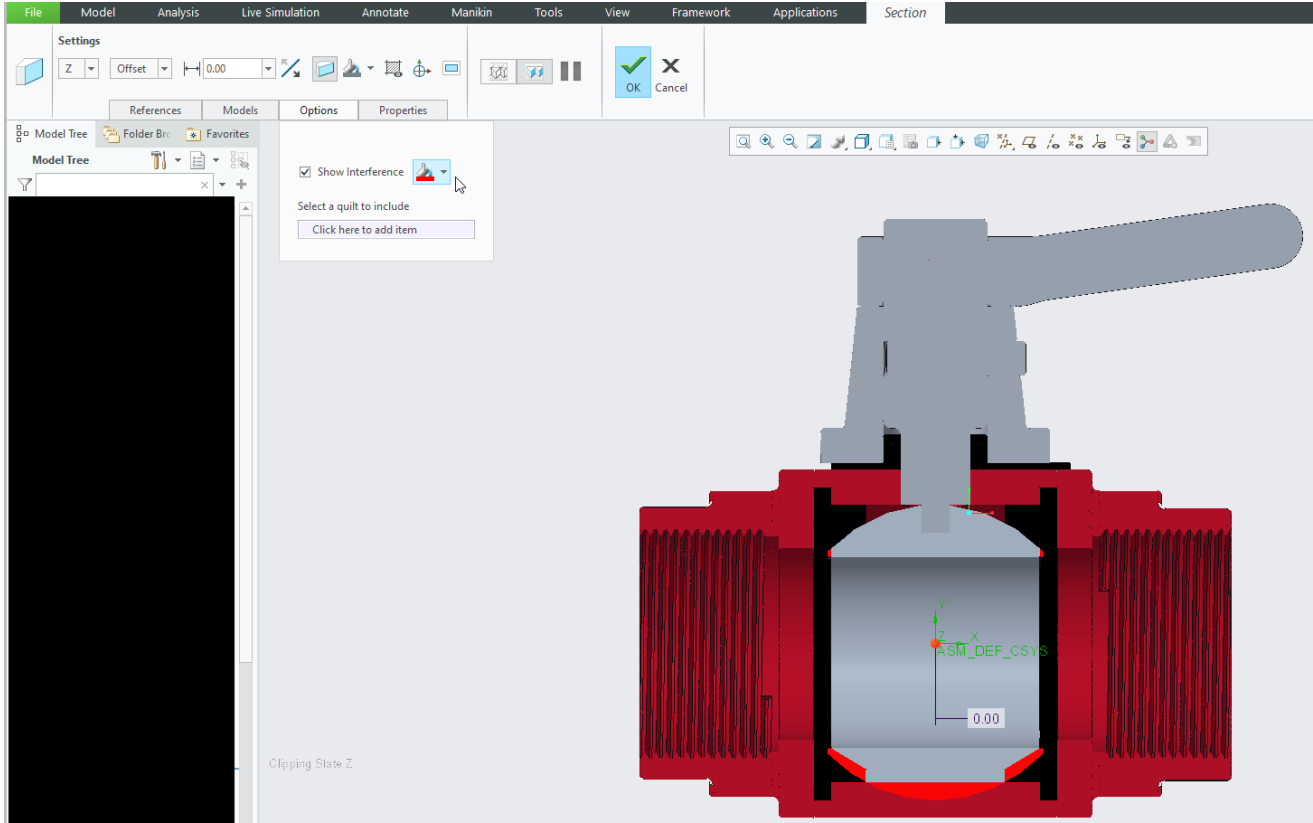
Final Project (2/2)

Exercise 6.1 – Ball valve

- One parameter that changes several parts
  - For ex. Pipe diameter → ball size, connector parts size
- Assembly engineering drawing with BOM and exploded view
- FEM simulation for handle
  - You need to estimate forces and constraints
- Rendered picture of the main assembly
  - Material types, surfaces, paints etc.

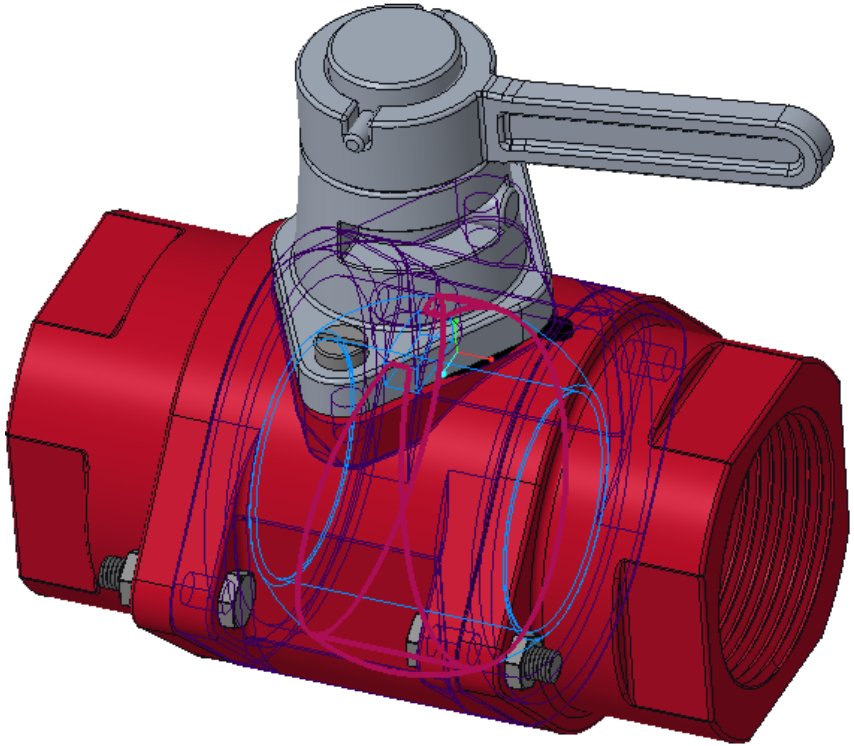
Overlapping geometries detection

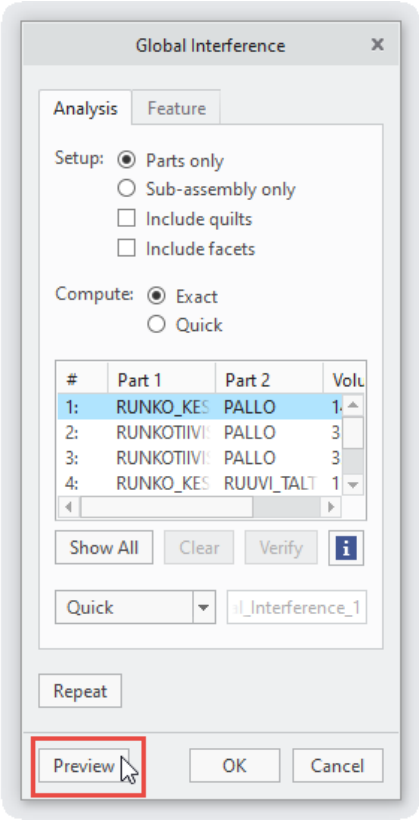
Thru section tool (select from View Manager → Edit)



Overlapping geometries detection

Thru Global Interference (in Analysis tab)





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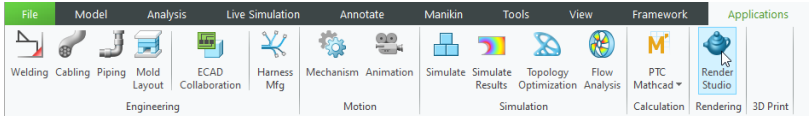
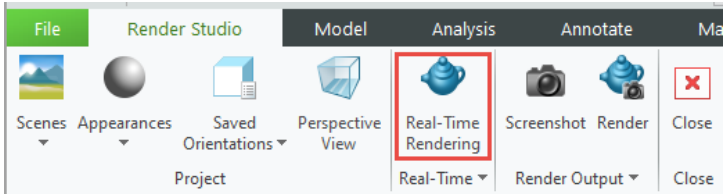
Rendering

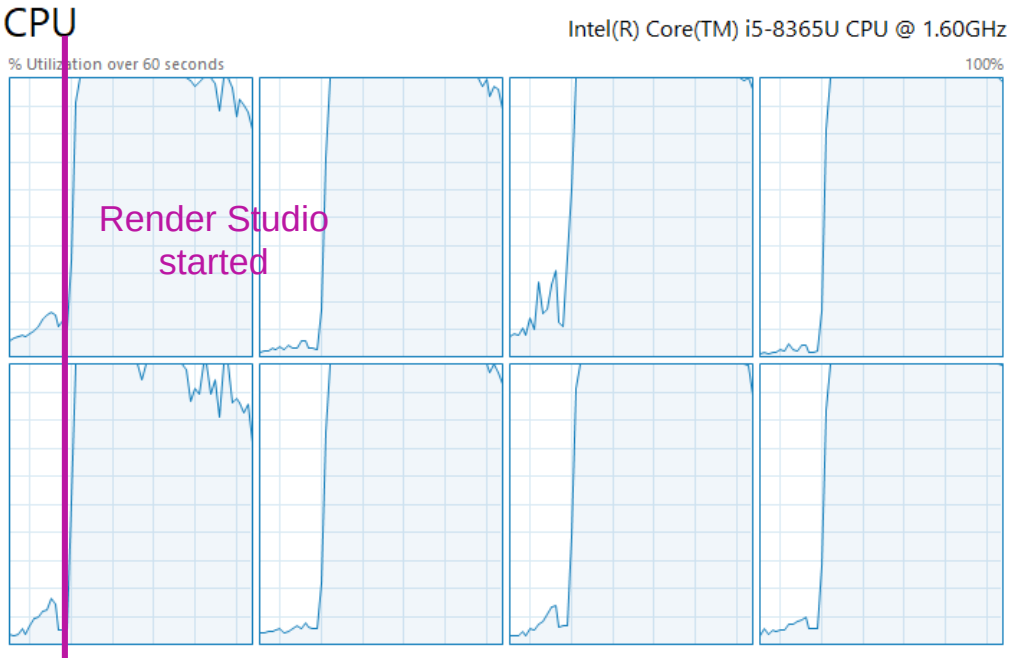
Creo’s Renderer

Creo uses integrated KeyShot’s Render Studio in Applications

- Real-time rendering by default → CPU heavy
- Turn off to save recourses







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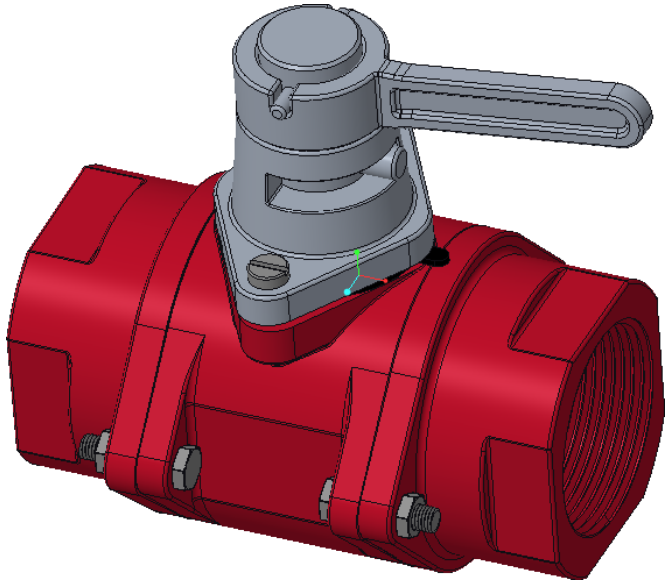
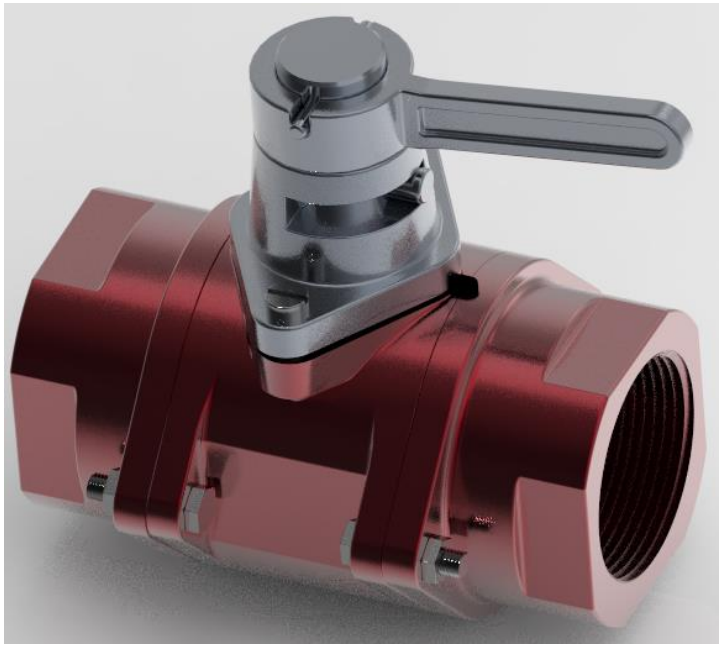
Creo’s Renderer

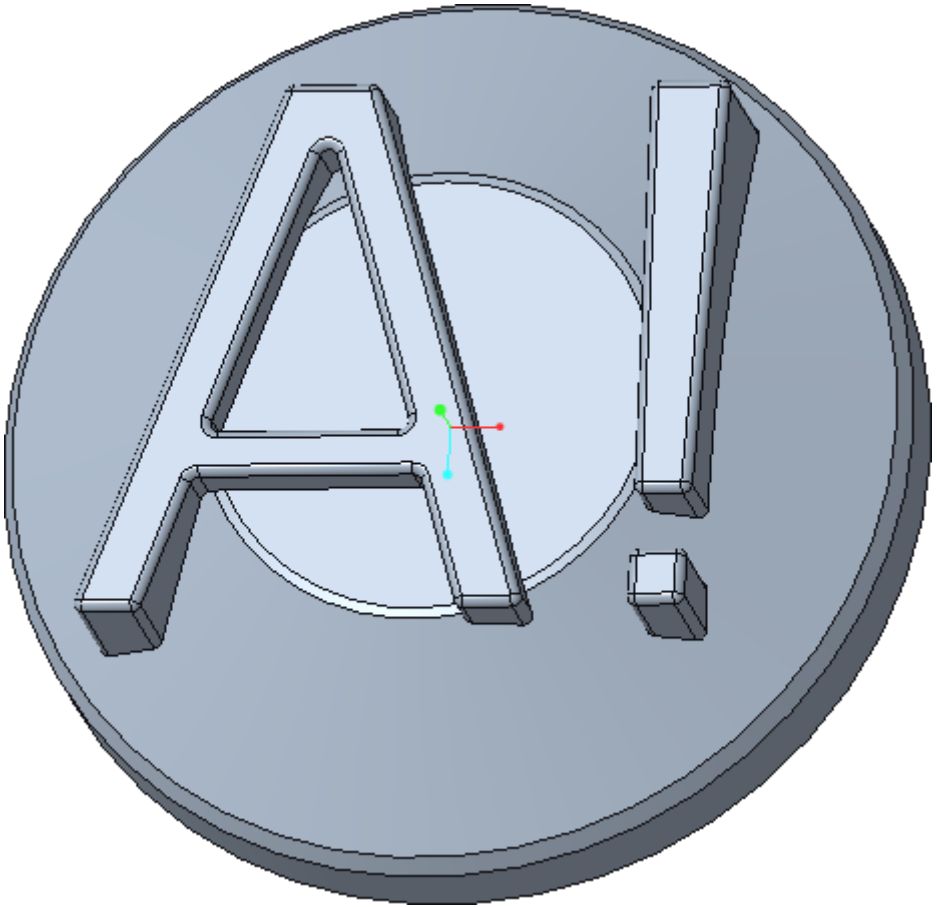
From this



to this



A Demo Model



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Rendering Process

Scene

- Environment for rendering, lights, background

Appearances

- Parts’ colors and textures

Render

Scene

Scene

- Selection of predefined cases (you can create your own)

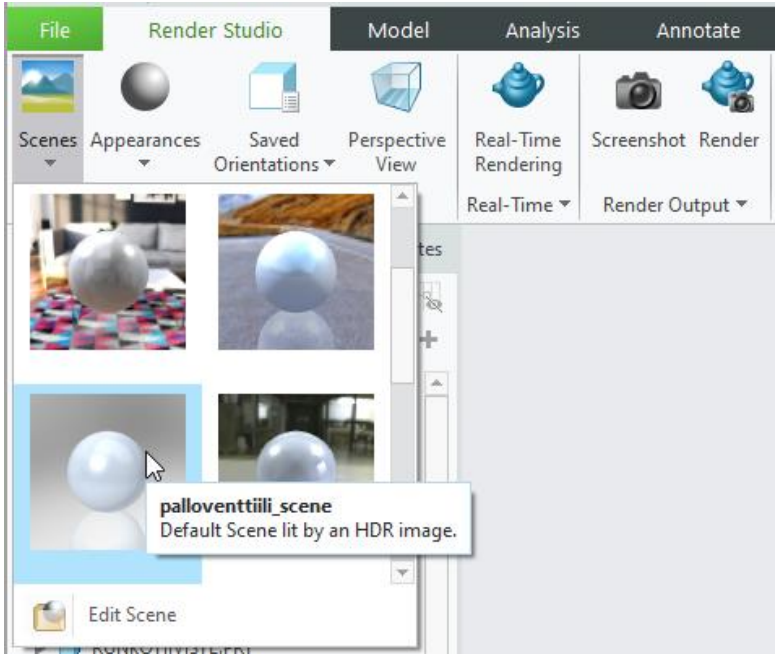
Environment

- Room background (emtpy is good)
- Floor definition etc.

Lights

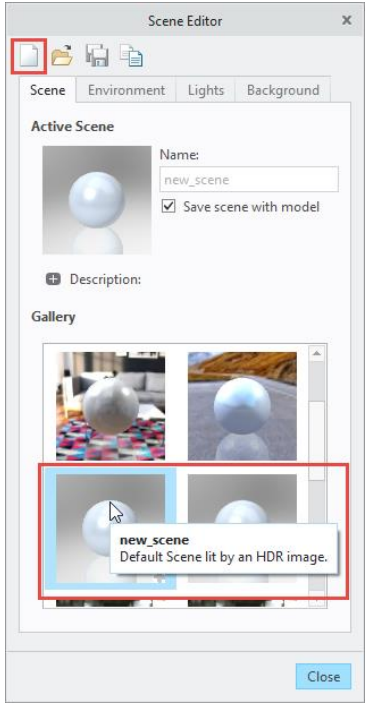
- What lights and where

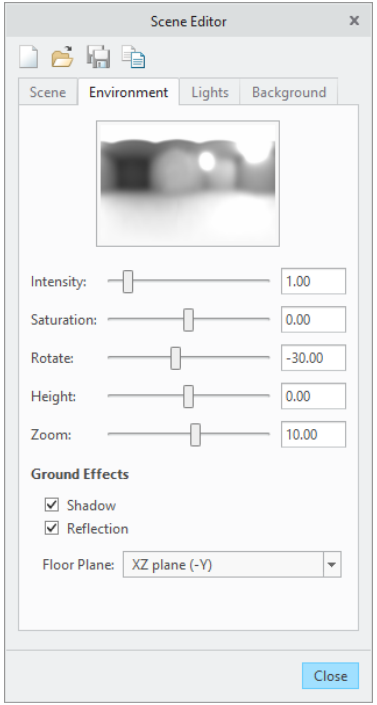
Background

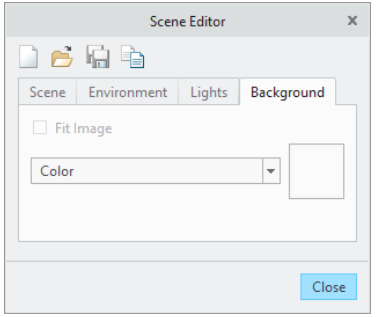


Scene

You can create your own scene and modify settings in the tabs







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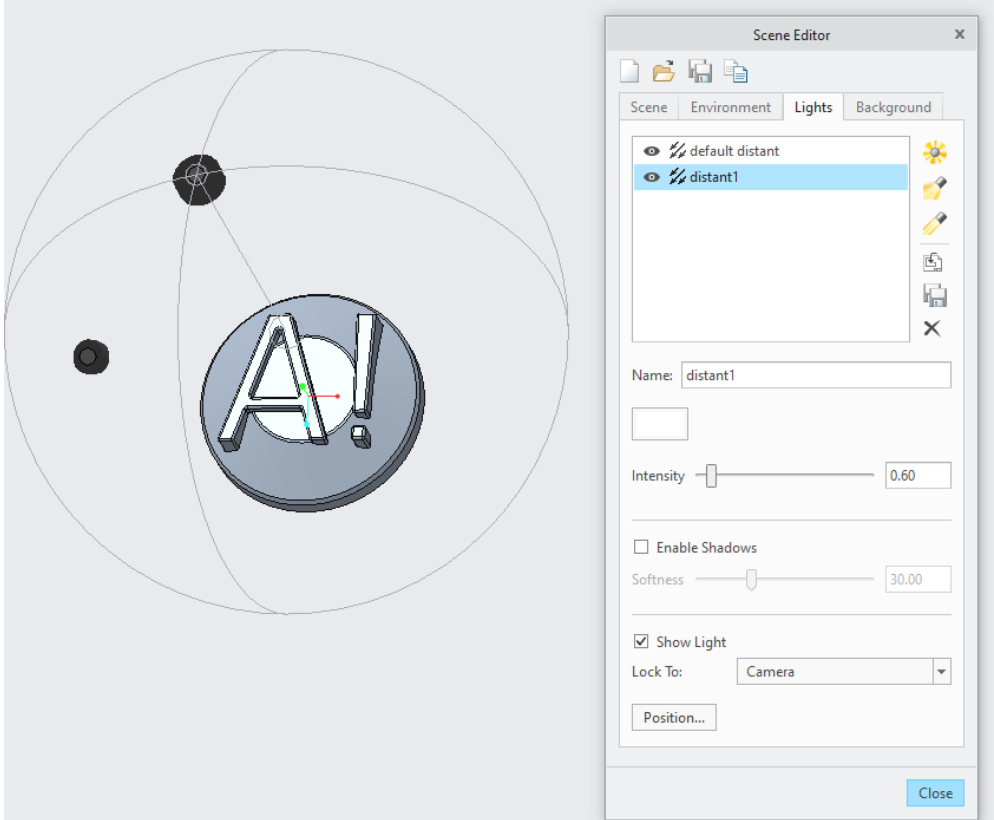
Scene - Lights

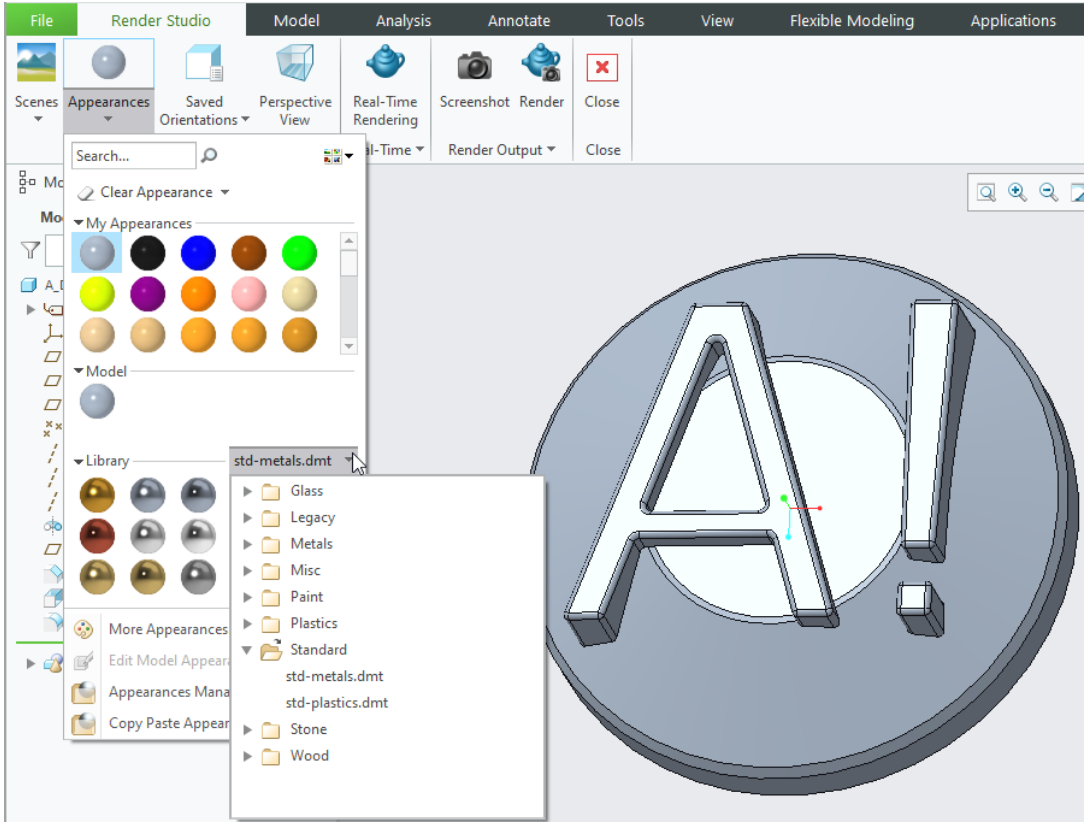
Can have multiple lights

- Lightbulb
- Distant
- Spot



Appearance

Lots of predefined materials with textures

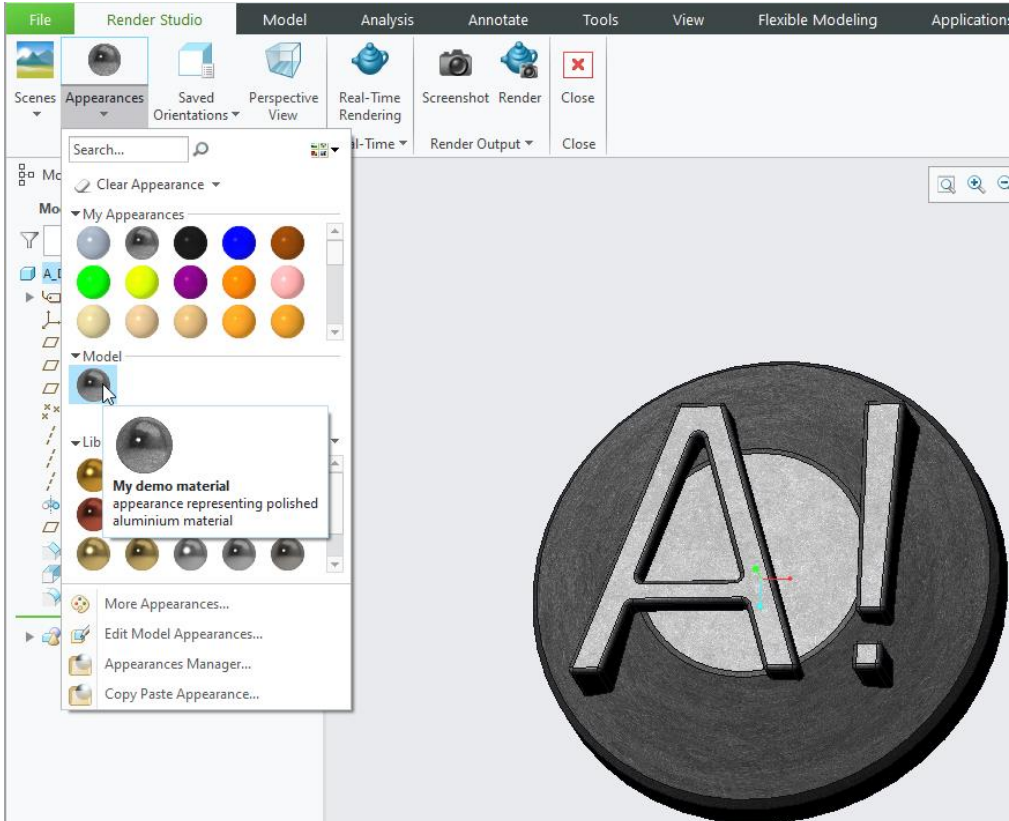


Appearance

You can modify materials

- Properties
- Texture
- Bump
- Decal

In picture casted aluminum with scratches



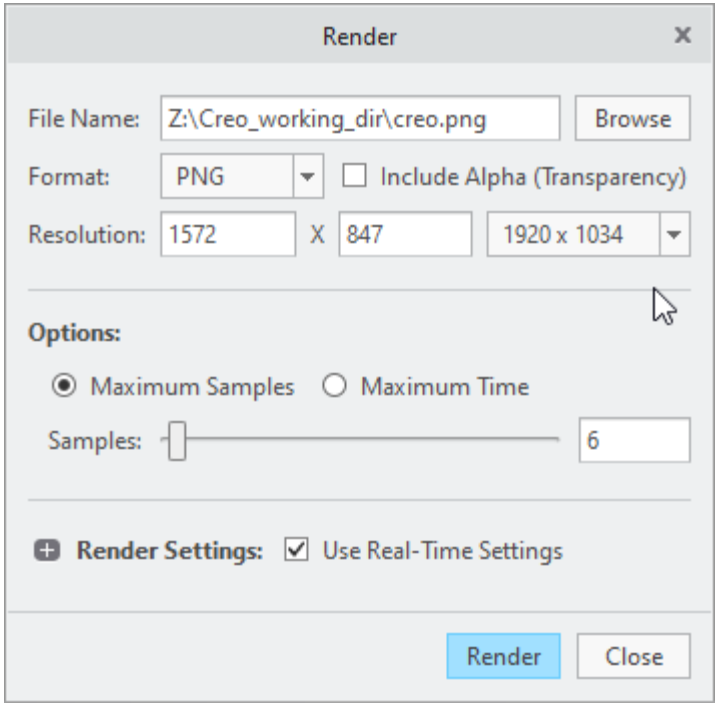
Render

Output as PNG

- Size depends on your screen size

Use Real-Time Settings

- The finer the more time it takes



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