



# Introduction to Mechanical Engineering, CAD Details 2

Workflow, Work in groups

CAD file formats

Threads



On whiteboard

## Popular neutral formats

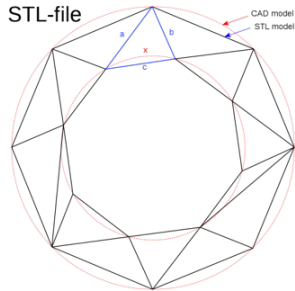


- step
- stl
- dae
- jt

# Stereolithography (.STL)

**Application:** for 3d printers, Gazebo sim

**Feature:** STL files describe only the surface geometry of a three-dimensional object without any representation of color, texture or other common CAD model attributes.



## ISO 10303 (.STEP)



**Application:** is an ISO standard for the computer-interpretable representation and exchange of product manufacturing information

**Feature:** Does not contain a lot of information, *including threads!*

## COLLADA (.DAE)



**Application:** COLLADA was originally intended as an intermediate format for transporting data from one digital content creation (DCC) tool to another application.

*Blender, Maya, Meshlab*

**Feature:** XML, which contains detail + texture

# Jupiter Tesselation (.JT)



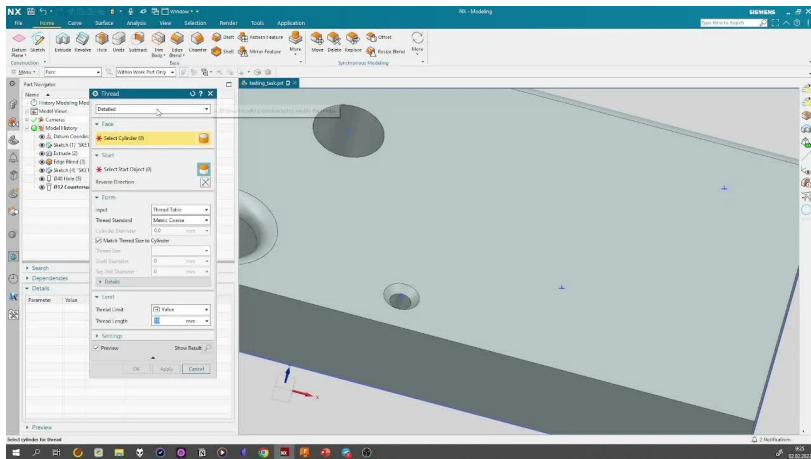
**Application:** is an openly-published ISO-standardized 3D CAD data exchange format used for product visualization, collaboration, digital mockups, and other purposes.

**Feature:** The format and associated software is structured so that extremely large numbers of components can be quickly loaded, shaded and manipulated in real-time.

Because JT files are inherently "lightweight" ( $\approx 1-10\%$  of the size of a CAD file) they are ideal for internet collaboration.

# Threads and difference between formats

## Video





# Tools for group work



Grabcad Workbench or OpenBom

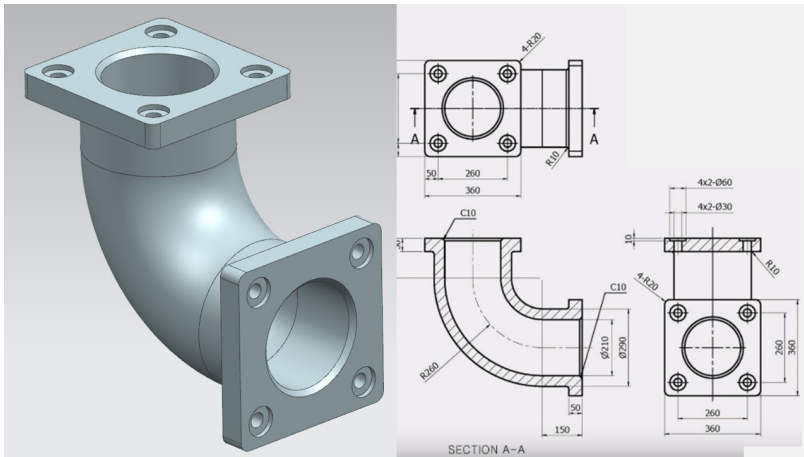
# The best way to present a Detail

*Video*



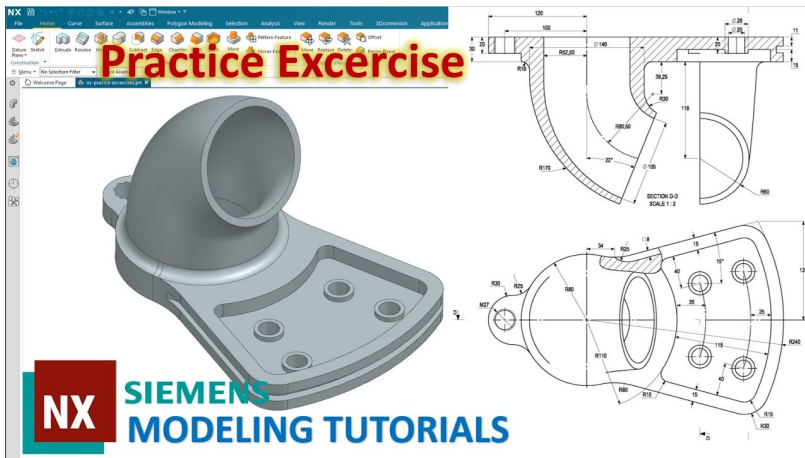
# Task for MegaChads

Video



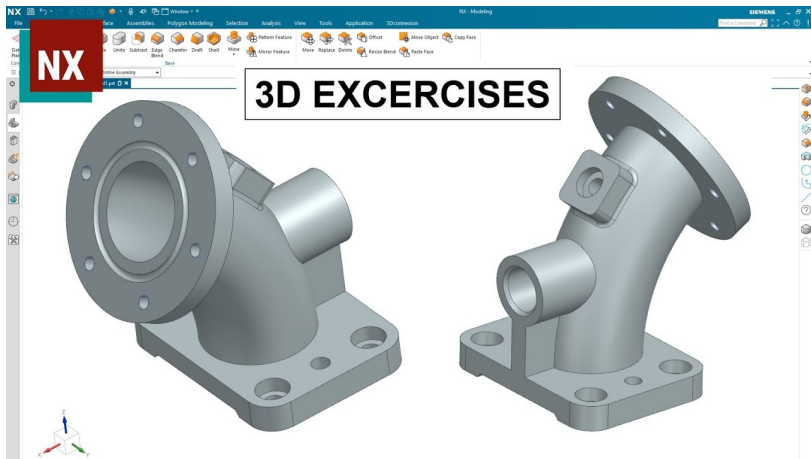
# Task for GigaChads

Video



# Task for Oleg-likeChads

Video



# Deserve "A" grade!

– Oleg Bulichev

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📍 @Lupasic

🏢 Room 105 (Underground robotics lab)