MARCH 2023

Introduction to CAD

UQ MARS x MESS

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Agenda

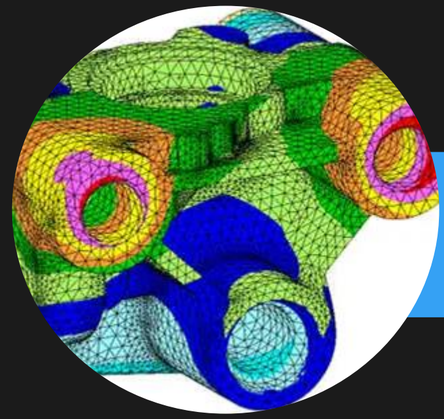
- What is CAD?
- Design Process
- Intro to NX
- Introductory Project
- Help

Computer Aided Design (CAD)

The use of computer software to aid in the design process.

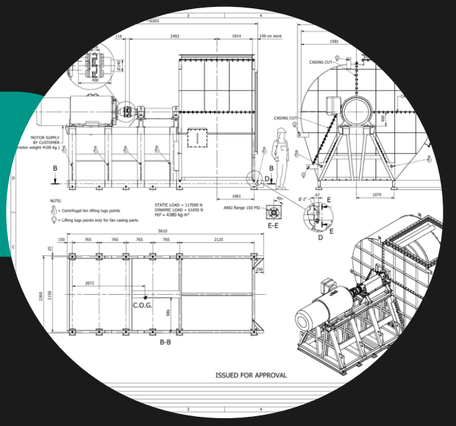
CAD vs CADD vs BIM

Creation



Analysis & Optimisation

Communication



What for?

Design new parts

Required for 3D Printing etc.

Model and analyse physical objects

Create Accurate Drawings

Download ready-made parts

Getting Better at CAD

- Understand the fundamentals
- Tutorial videos & resources
- Workshops!
- Keep using it!

CAD Design Process

Design individual parts

Combine parts into an assembly

Computer analysis

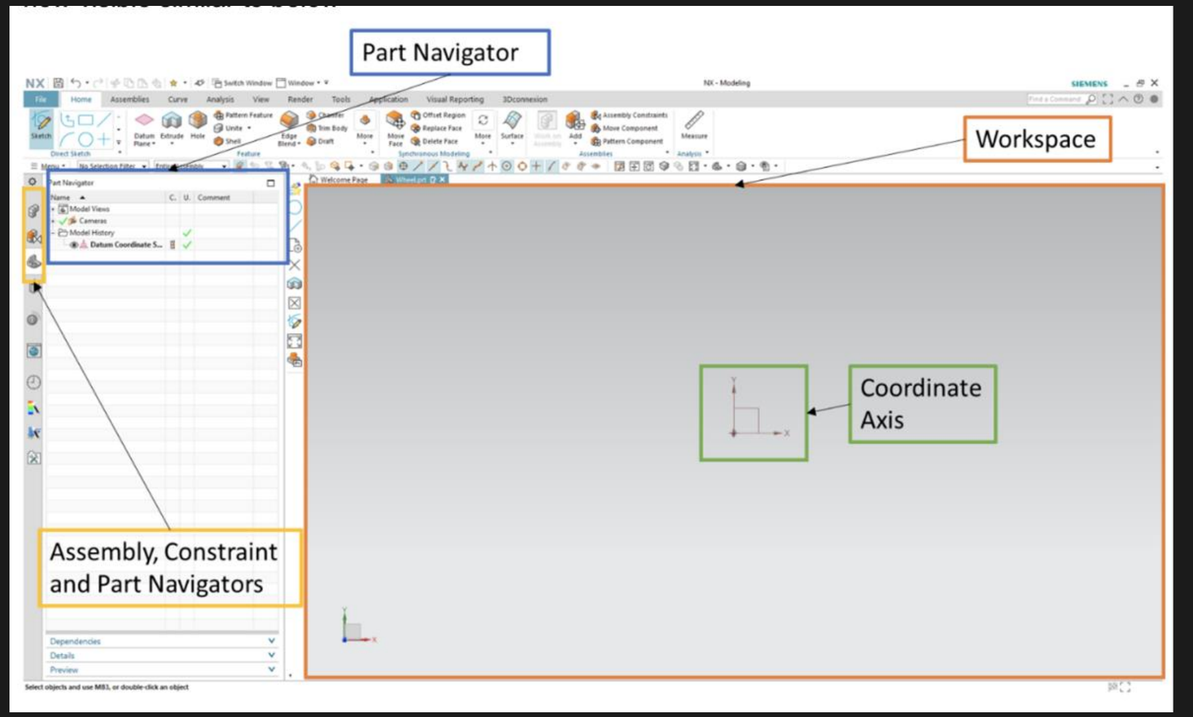
Present model as drawings

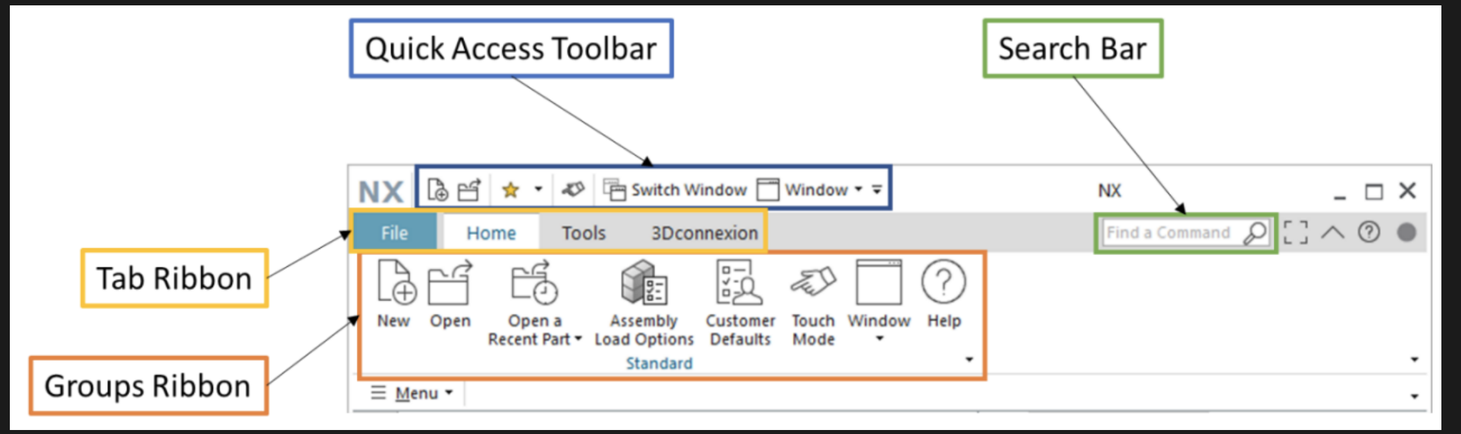
Software

- We will be using NX
- Alternatives are:
  - Autodesk Suite
    - **Inventor**
  - Solid Edge
  - SolidWorks
  - Blender*

Getting Around NX

- ❑ Navigating the UI
- ❑ Structure of parts and assemblies

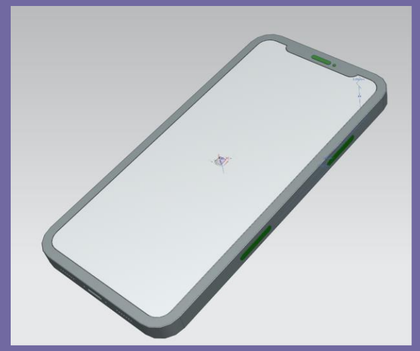




Introductory Project

01

02



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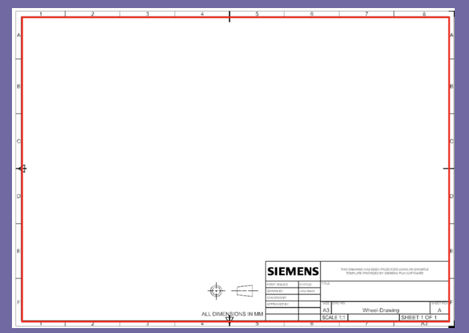
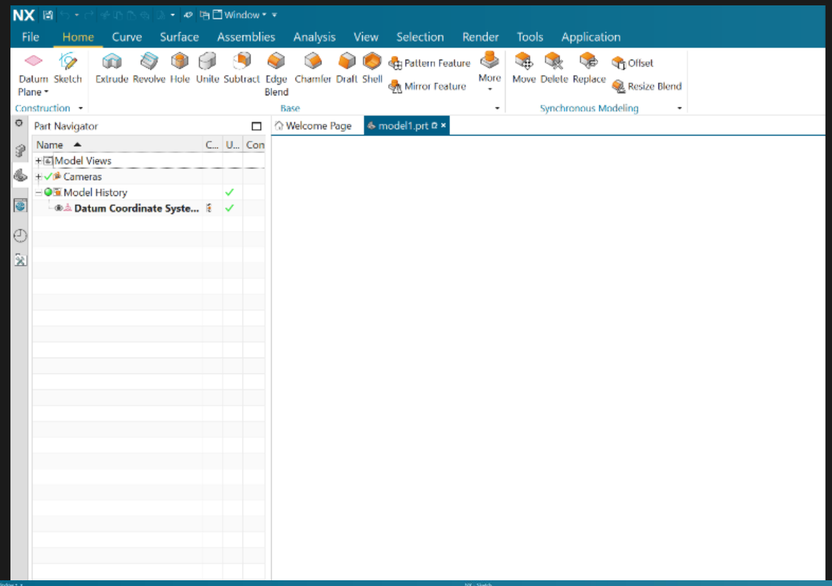
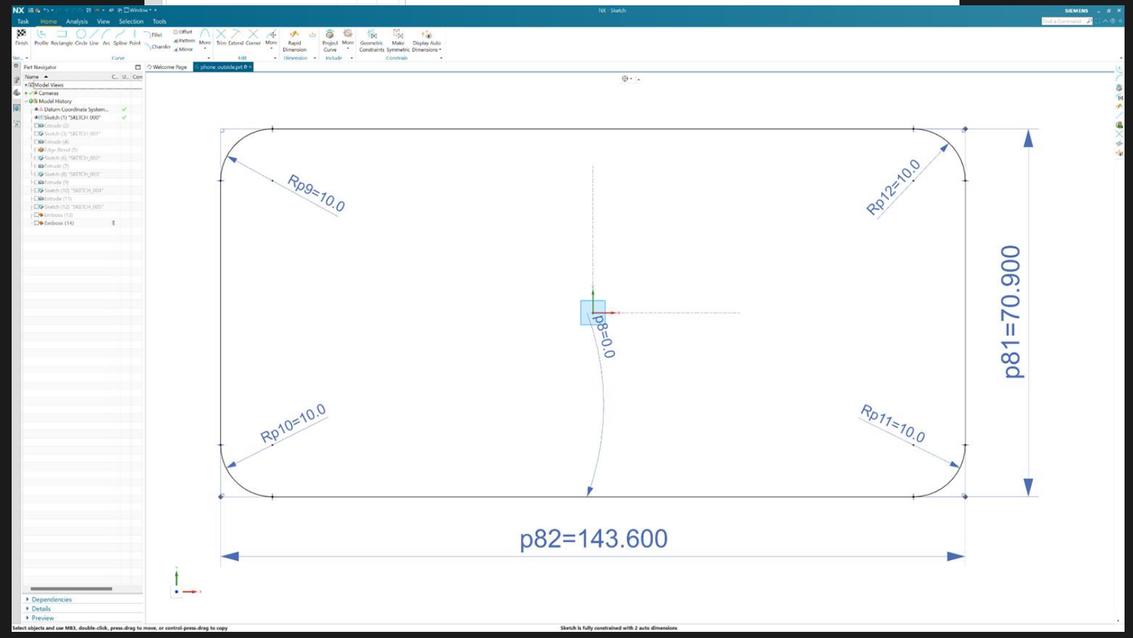


Creating Sketches

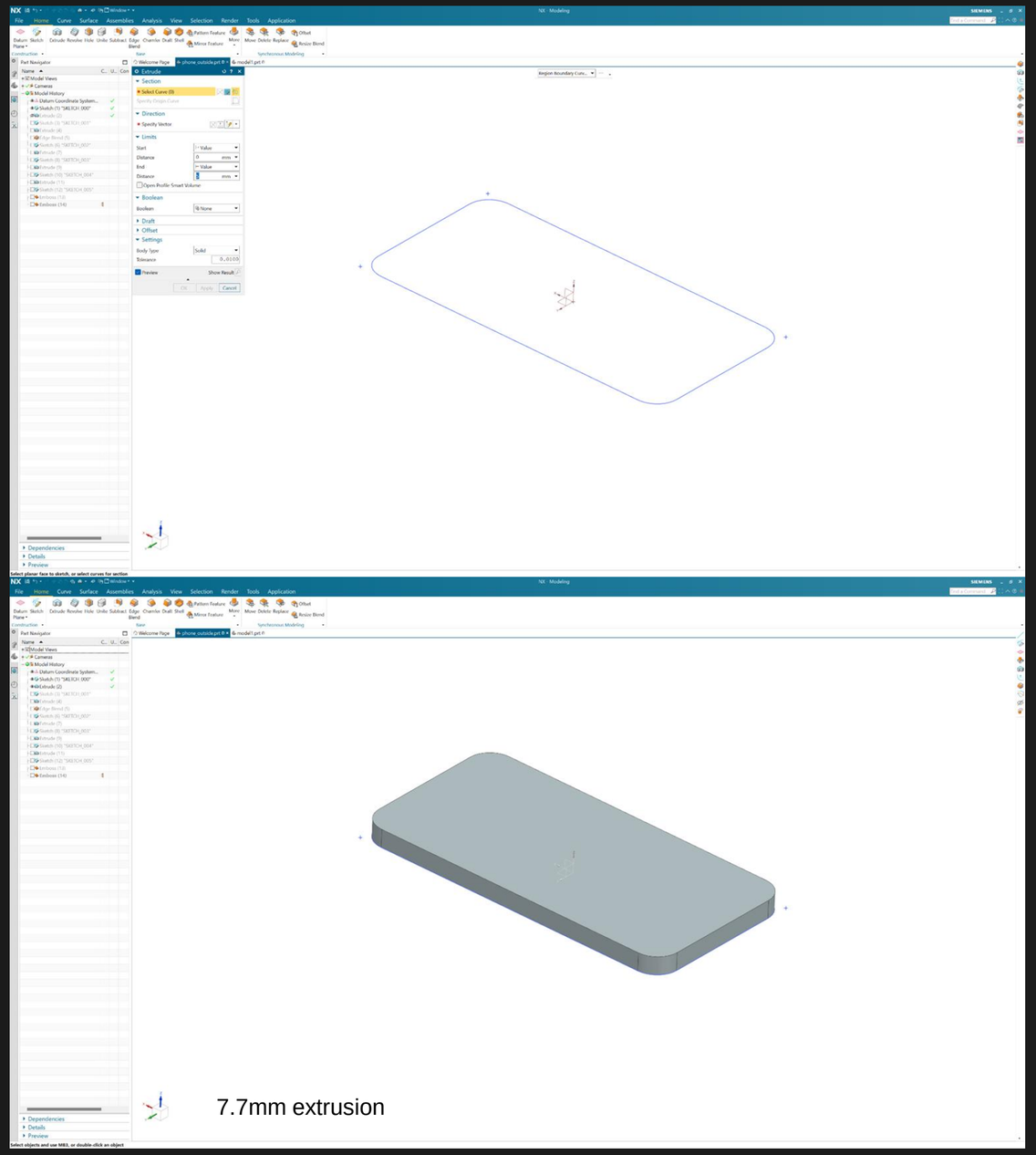
- ❑ Starting sketches
- ❑ Basic Shapes and Fillets
- ❑ Dimensions





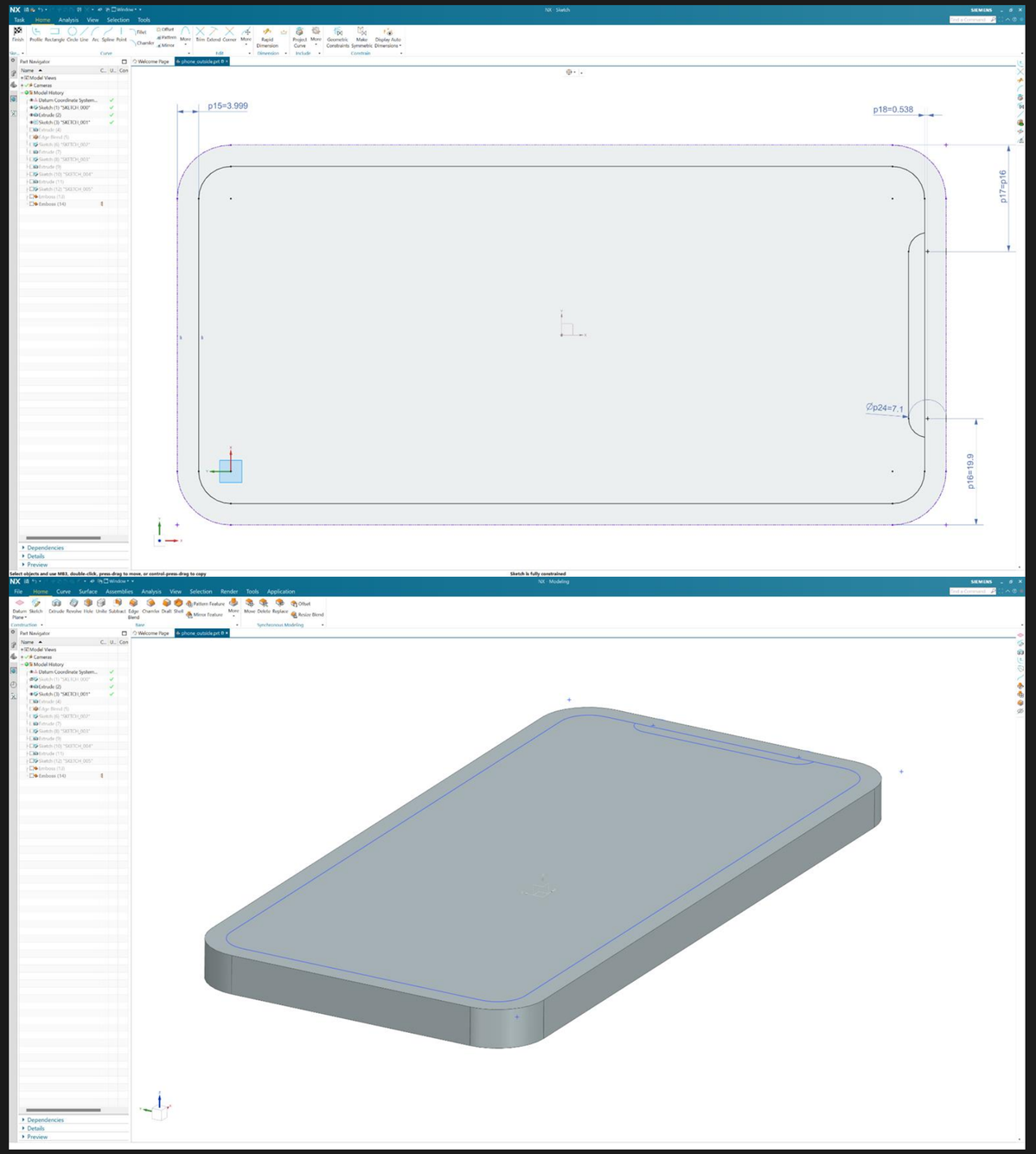
Making it 3D

- Extrusions



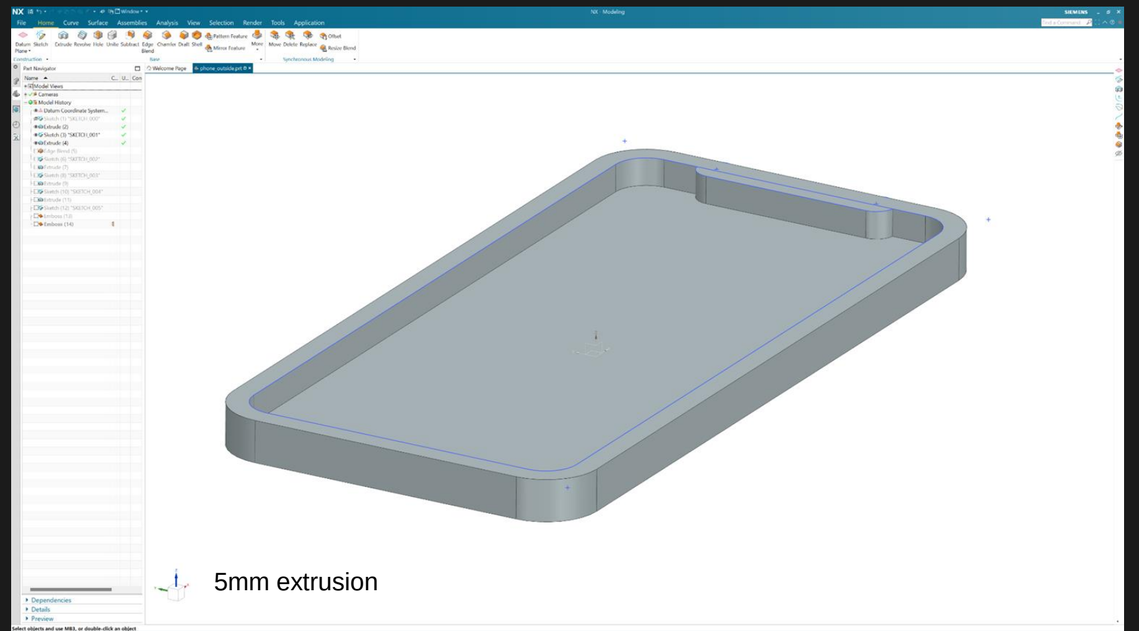
Sketches Pt. 2

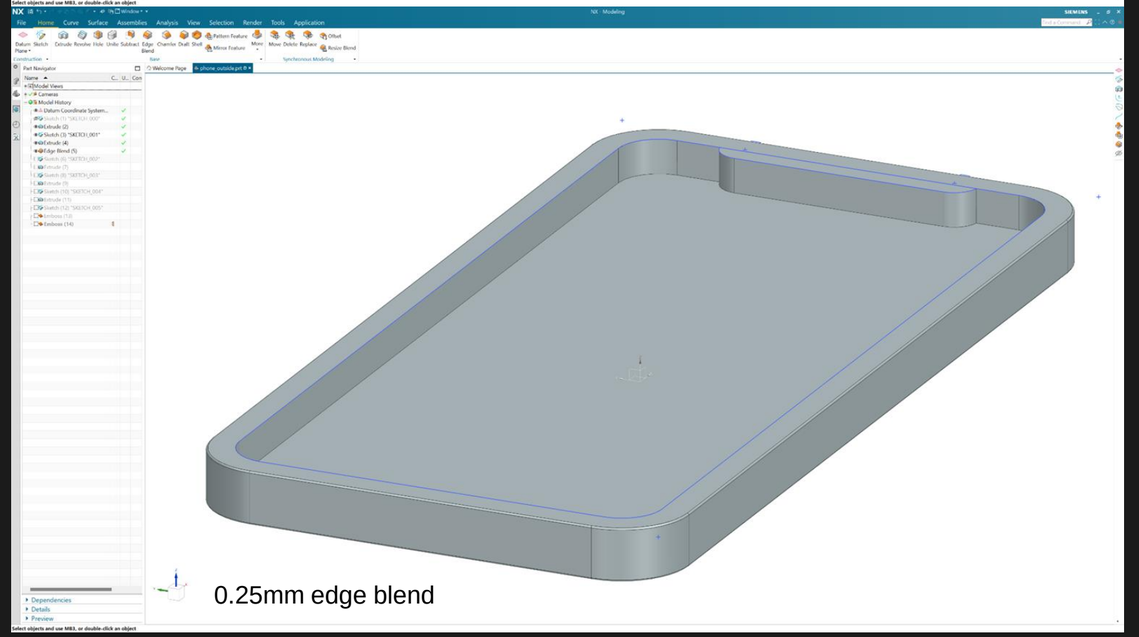
- ❑ Projecting Geometry
- ❑ Offsets
- ❑ Constraints
- ❑ Construction Lines
- ❑ Trim Feature



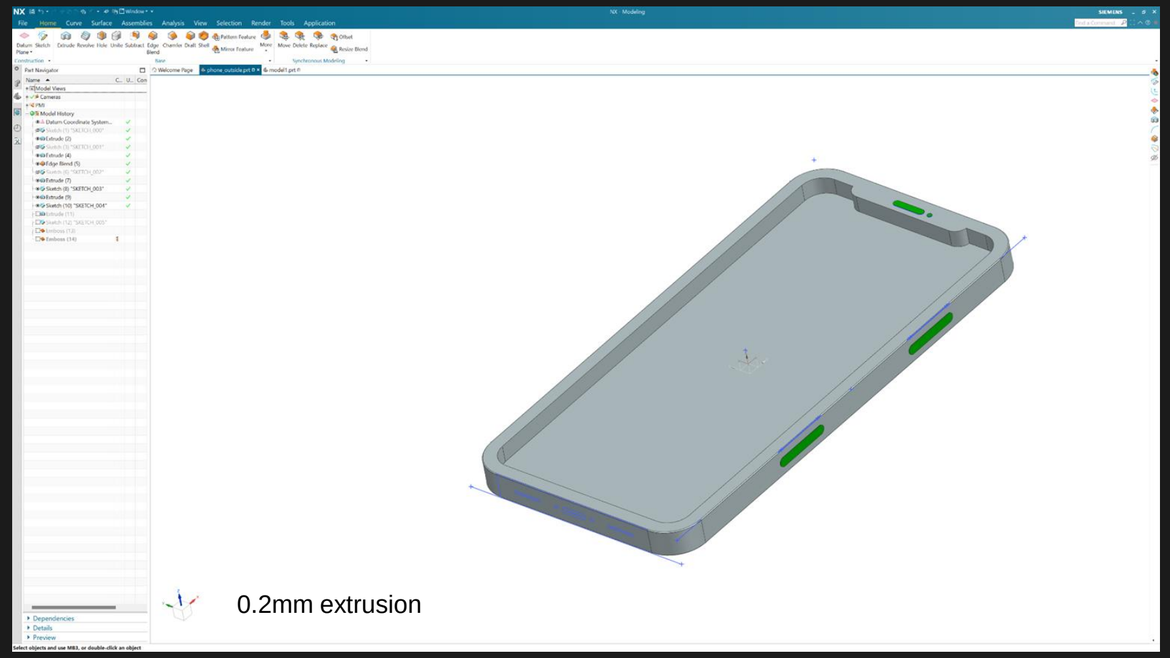
3D Features Pt. 2

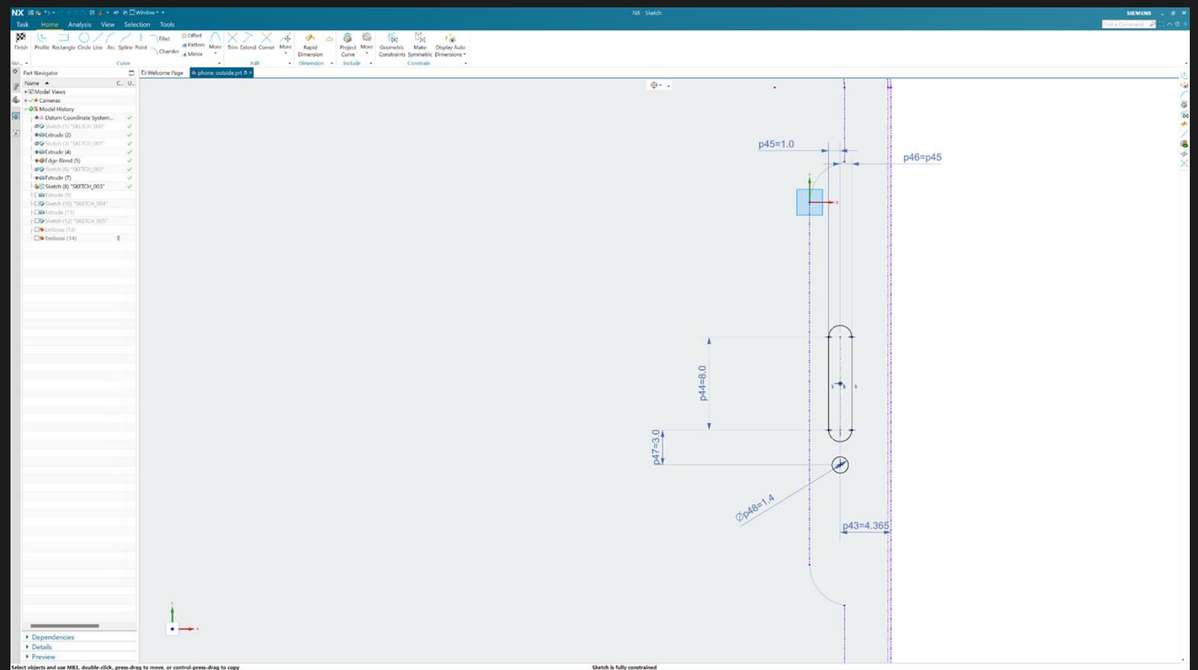
- ❑ Extrusions (again)
- ❑ Fillets (Edge Blends)





Details


0.2mm extrusion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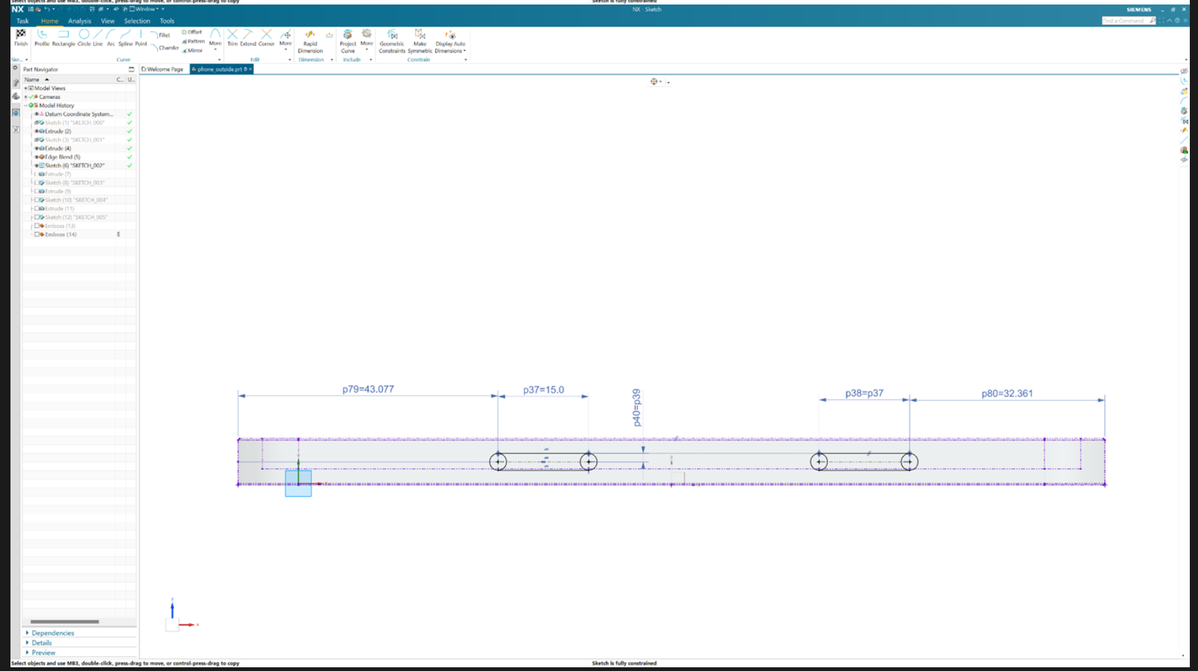
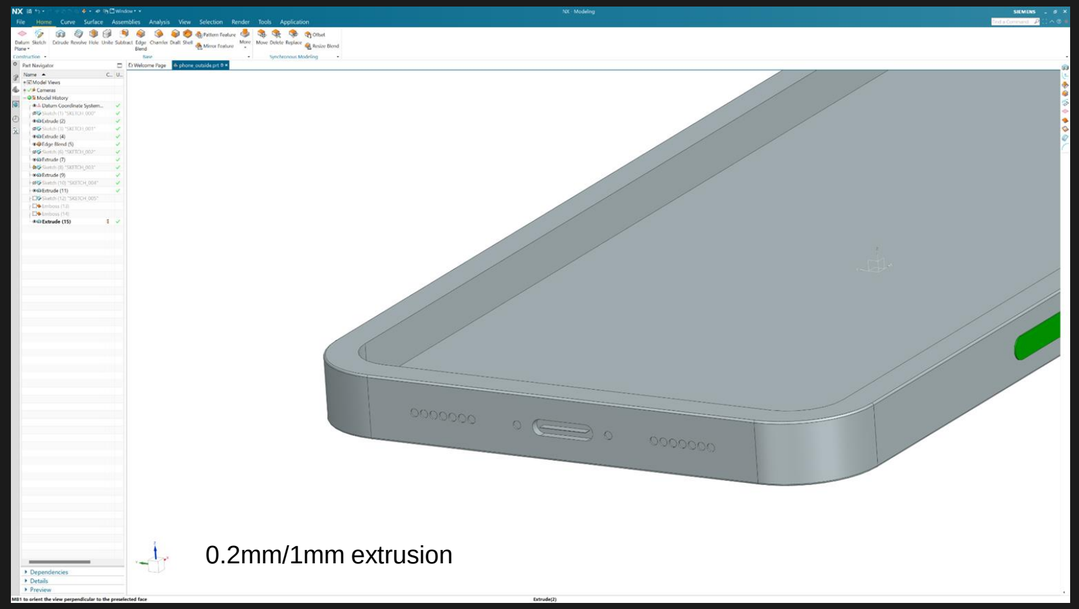
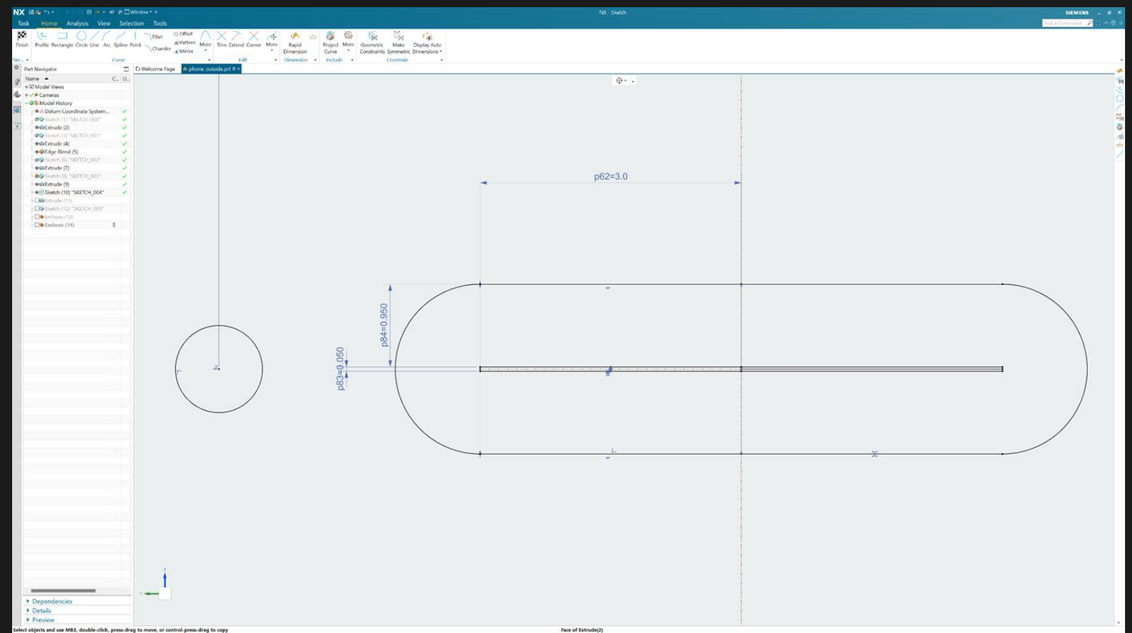
p46=p45
p44=8.0
p47=3.0
p48=1.4
p43=4.365

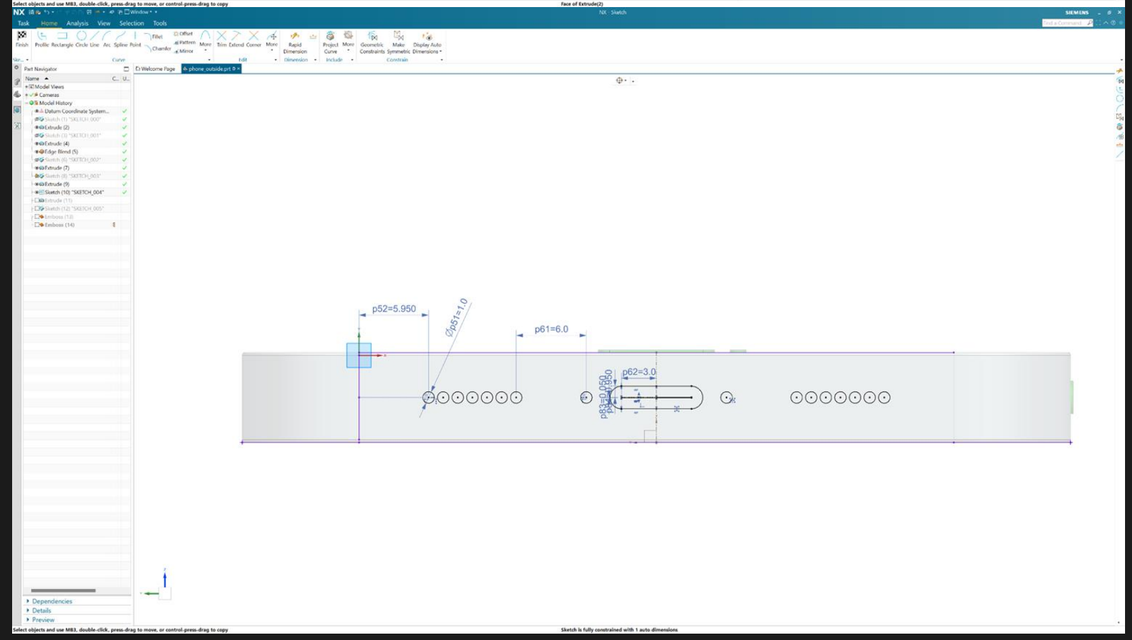

p79=43.077
p37=15.0
p40=p39
p38=p37
p80=32.361

More Details

- Patterns and Mirroring

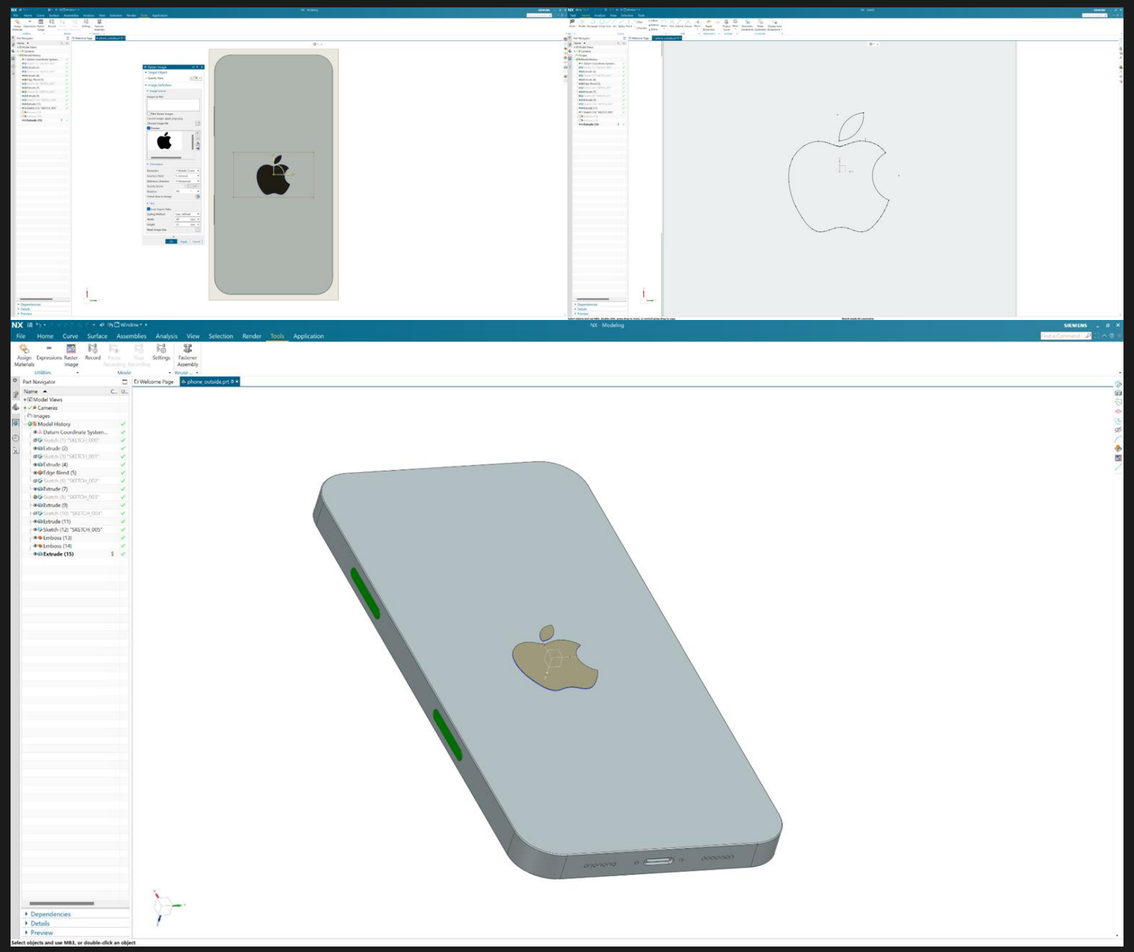






More Details

- ❑ Embossing
- ❑ Using images
- ❑ Complex shapes

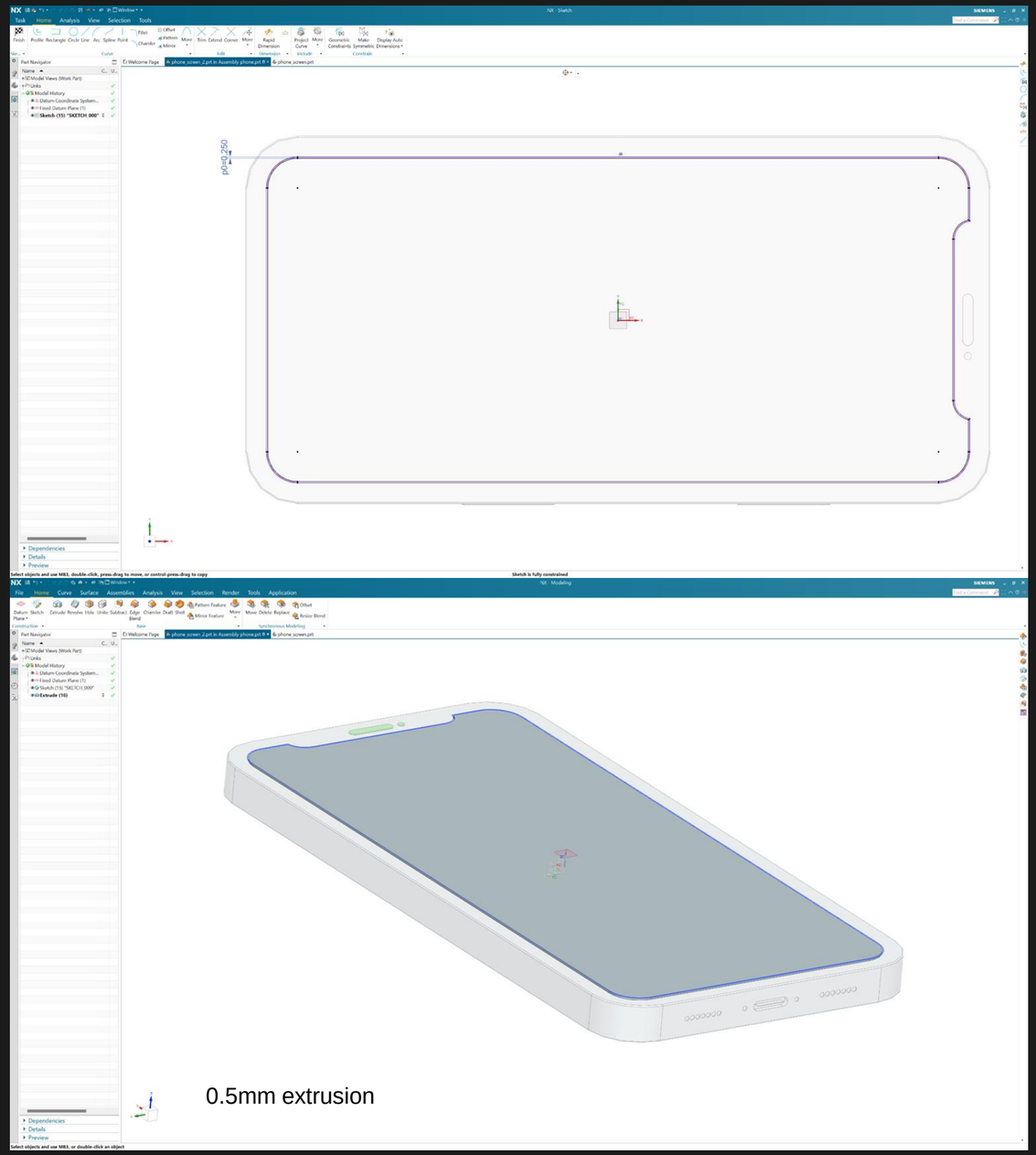


Assemblies

- ❑ Importing Parts
- ❑ Importing Downloaded Parts
- ❑ Constraining

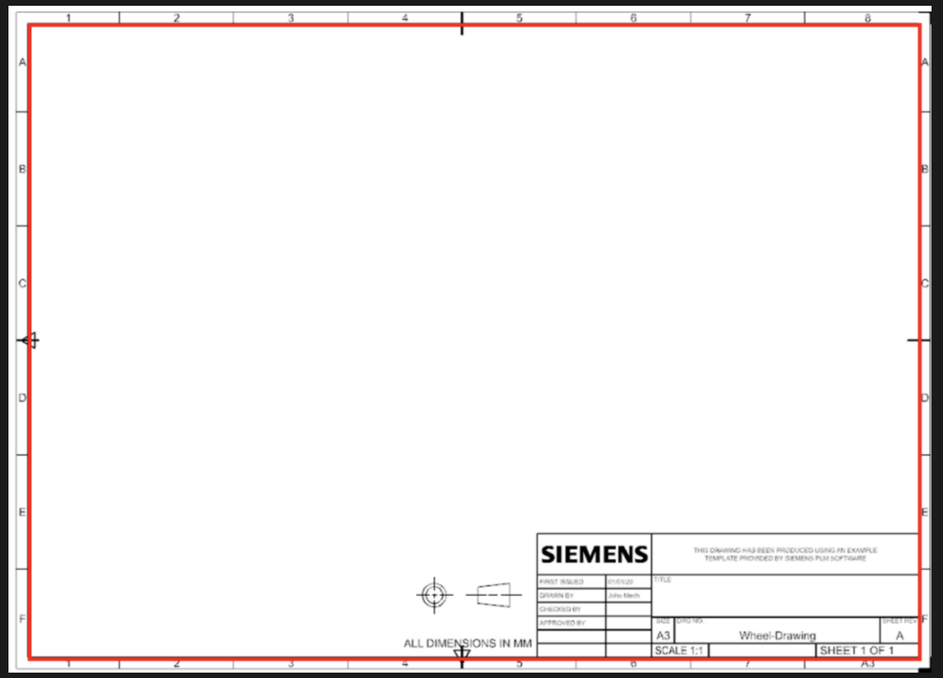
In-Place Parts

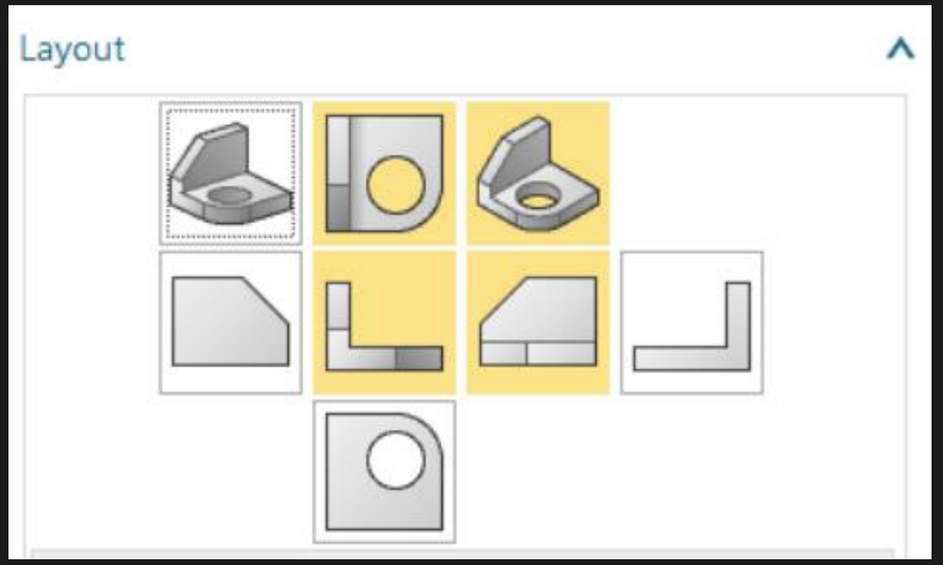
❑ Creating Parts in Assemblies



Drawings

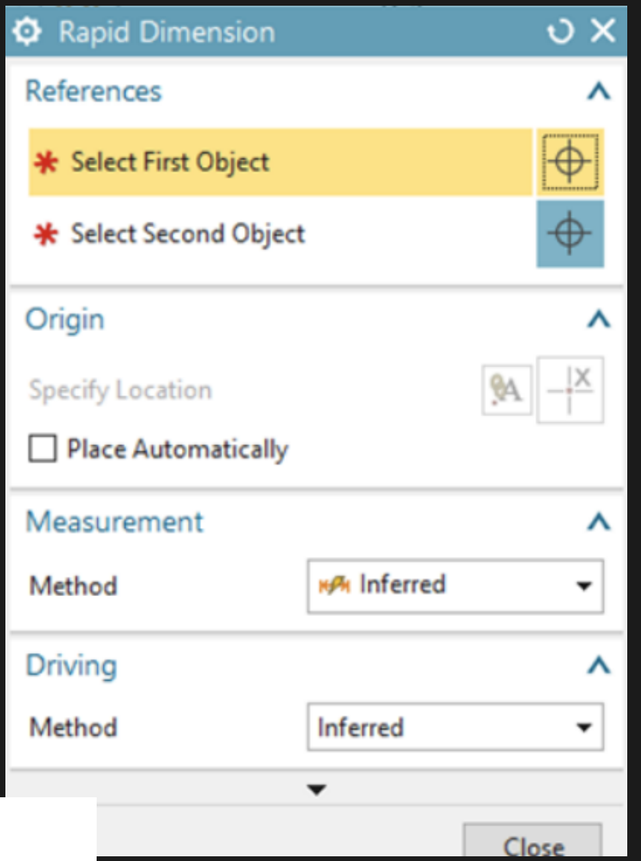
- ❑ Creating Drawings
- ❑ Placing parts

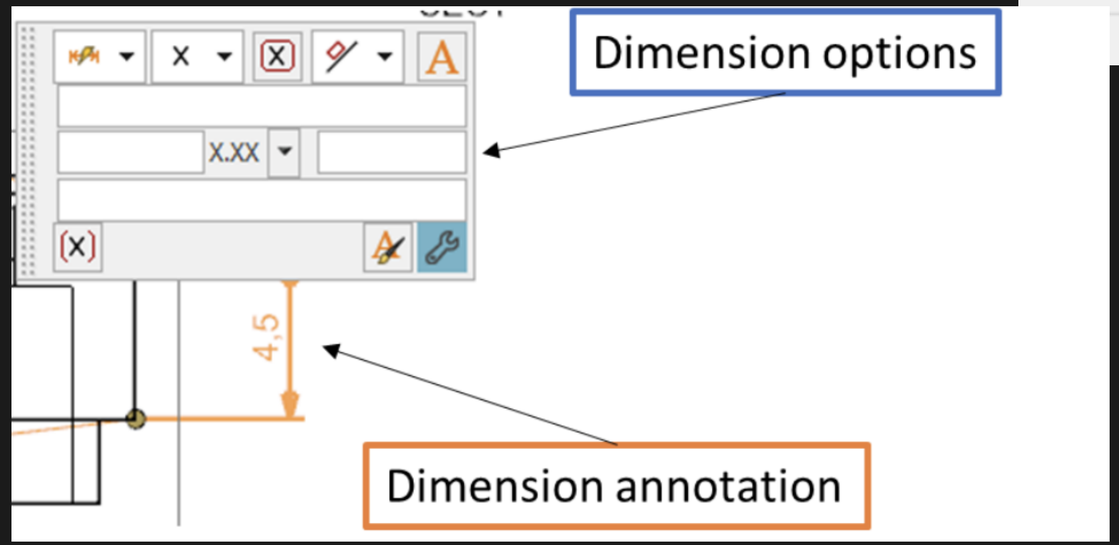




Details

- Dimensions





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