

A person in a white lab coat is holding a tablet, standing in a workshop or lab. In the background, there is a 3D printer and other people working. The scene is overlaid with a semi-transparent teal box containing text.

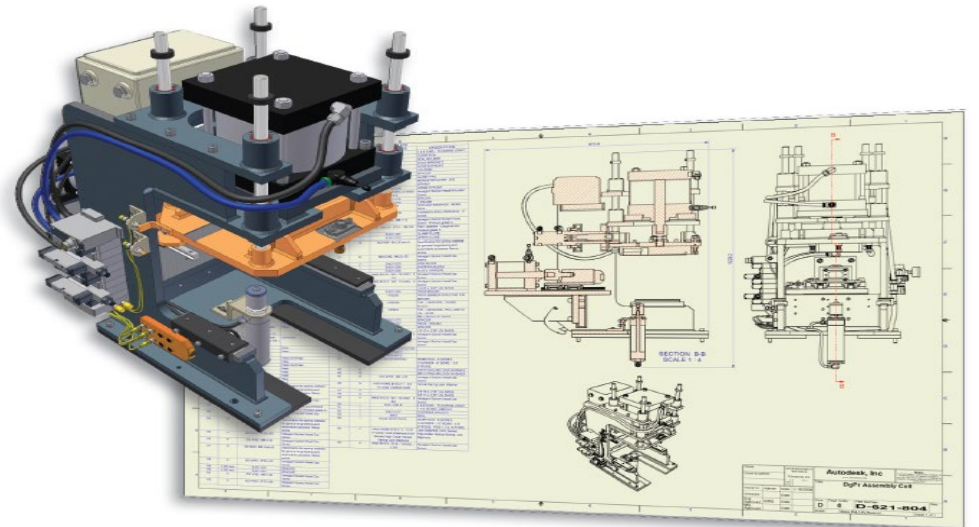
Introduction to CAD: Autodesk Fusion 360 Autodesk Account Registration

M Archer - 17.11.21

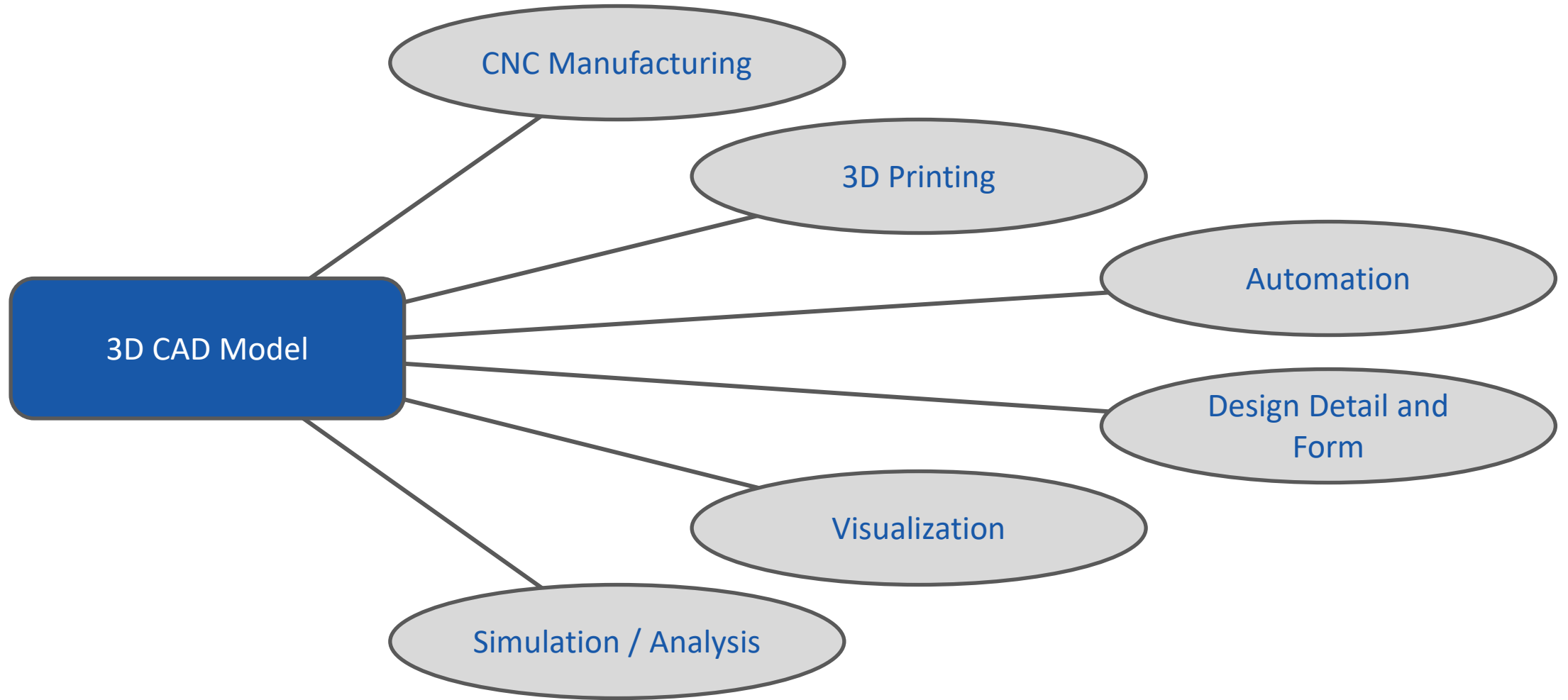
What is 3D Modeling

Creation of a digital model of the real physical object.

3D modelling is the process of developing a mathematical representation of any three-dimensional surface of an object via specialized software.



3D Design Use



Design Detail and Form

- Ability to design and communicate complex objects that are almost impossible to do without 3D design.



Courtesy of Matt Bellis



Courtesy of Nic Thatcher

Visualization

- Leveraging of 3D design models for creating realistic visualizations for communicating designs.



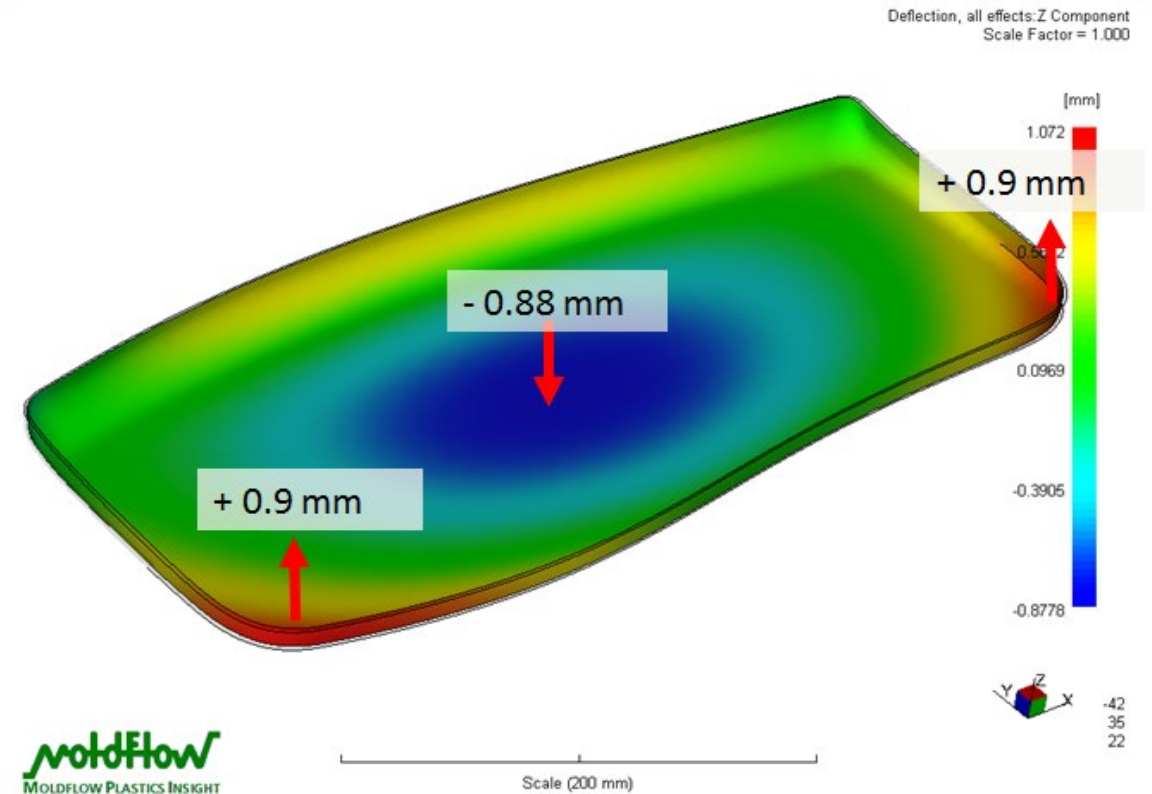
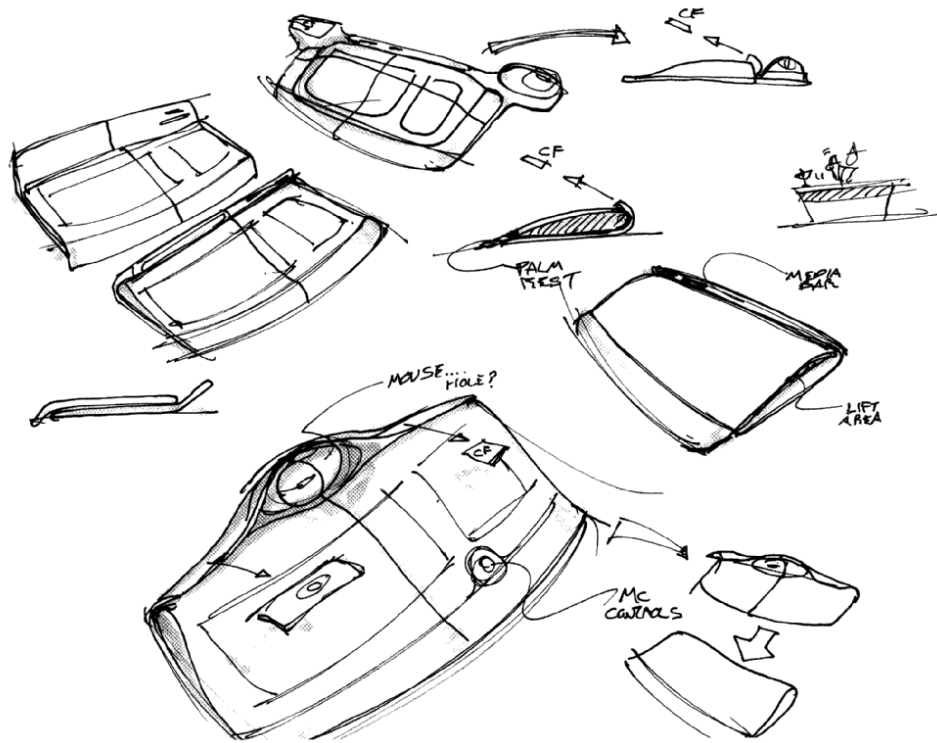
Courtesy of Georgia Hatton



Courtesy of Adam Higgins

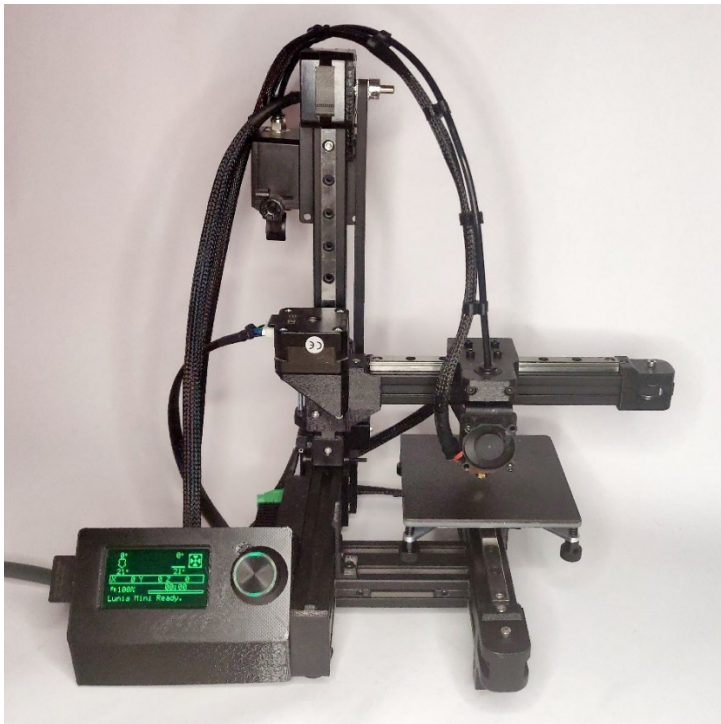
Simulation and Analysis: Keyboard base in design phase

- Ability to analyze 3D design models early and often in the design cycle to optimize the design and identify defects without physical components.



Functional 3D Printed Prototypes:

- Generation of physical prototype models from 3D model geometry to validate Design Form & Function.



Courtesy of Ken Pearce



Courtesy of Adam Higgins

Automation:

- Fully automated process with low overhead for creating product configurations and design personalization's for clients.

CNC Manufacturing

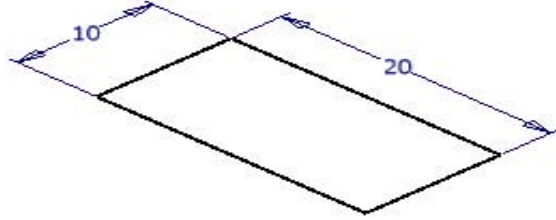
- Programming of Computer Numerical Control (CNC) manufacturing equipment from 3D model geometry to automate manufacturing of production components.

What is 3D Parametric Modeling

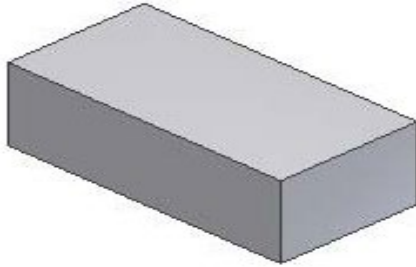
- A parametric model is a 3D model that is controlled and driven by geometric relationships and dimensional values.
- With a parametric model, you can change a value of a feature and the part model is adjusted according to that value and existing geometric constraints.

Progression of a Parametric Model

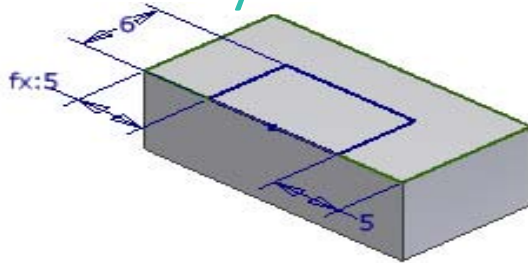
1. Initial Sketch



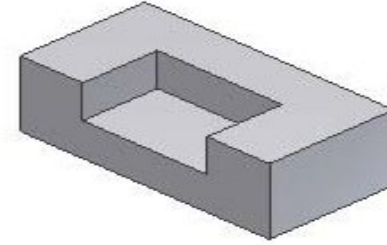
2. Base Sketch Feature



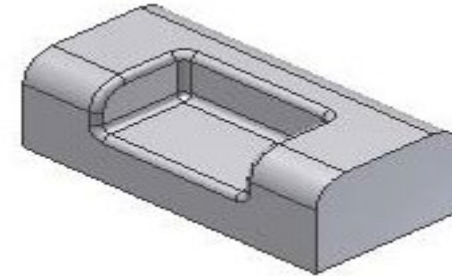
3. Secondary Sketches



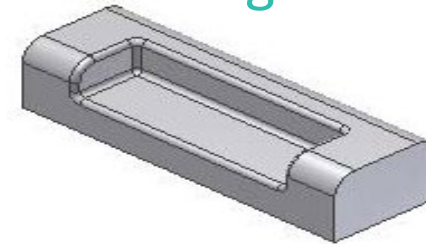
4. Secondary Feature from Sketch



5. Add Placed Features



6. Parametric Change with Update



Fusion 360

Demonstration

Fusion 360 Documentation and Tutorials

Technical documentation and step-by-step guides.

These tutorials walk you through the core Fusion 360 solid modelling workflows. You will use real models to familiarize yourself with the solid modelling tools and core workflows.

<https://help.autodesk.com/view/fusion360/ENU/?guid=GUID-1C665B4D-7BF7-4FDF-98B0-AA7EE12B5AC2>

Fusion 360 Self-paced Learning

Get access to video tutorials and self-guided courses.

<https://help.autodesk.com/view/fusion360/ENU/courses/>

Autodesk Account Registration

Create Account:

<https://accounts.autodesk.com/register?viewmode=iframe&ReturnUrl=%2Fauthorize%3Fviewmode%3Diframe%26lang%3Den%26realm%3Ddownload-uk.autodesk.com%26ctx%3Dadsk-download-uk%26AuthKey%3Dc2c9c138-a21f-4db3-a350-75e9623625f7>

Download Fusion 360

Students and educators can get free one-year educational access to Autodesk products and services, renewable as long as you remain eligible.

<https://www.autodesk.com/education/edu-software/overview?sorting=featured&page=1>

Next Week: Interactive Exercises

Please note that the session next Wednesday will be from 12.00 -1.00pm.

A new Teams invite will be sent out.