Celtic3d

3d Printing – live demo

About Celtic3d Ltd

Established: September 2016

Based in Aberdeen

Employees: 1 (so-far)

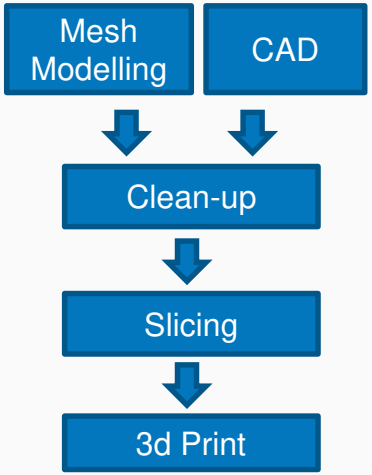
20 yrs + in IT Service Development and Delivery

10 yrs experience in digital modelling

2 yrs experience in 3d printing

Services

Architectural models



Product prototypes

Customization Software

Clean-up

Model must be “manifold”. A unified shape with no holes.

No internal geometry.

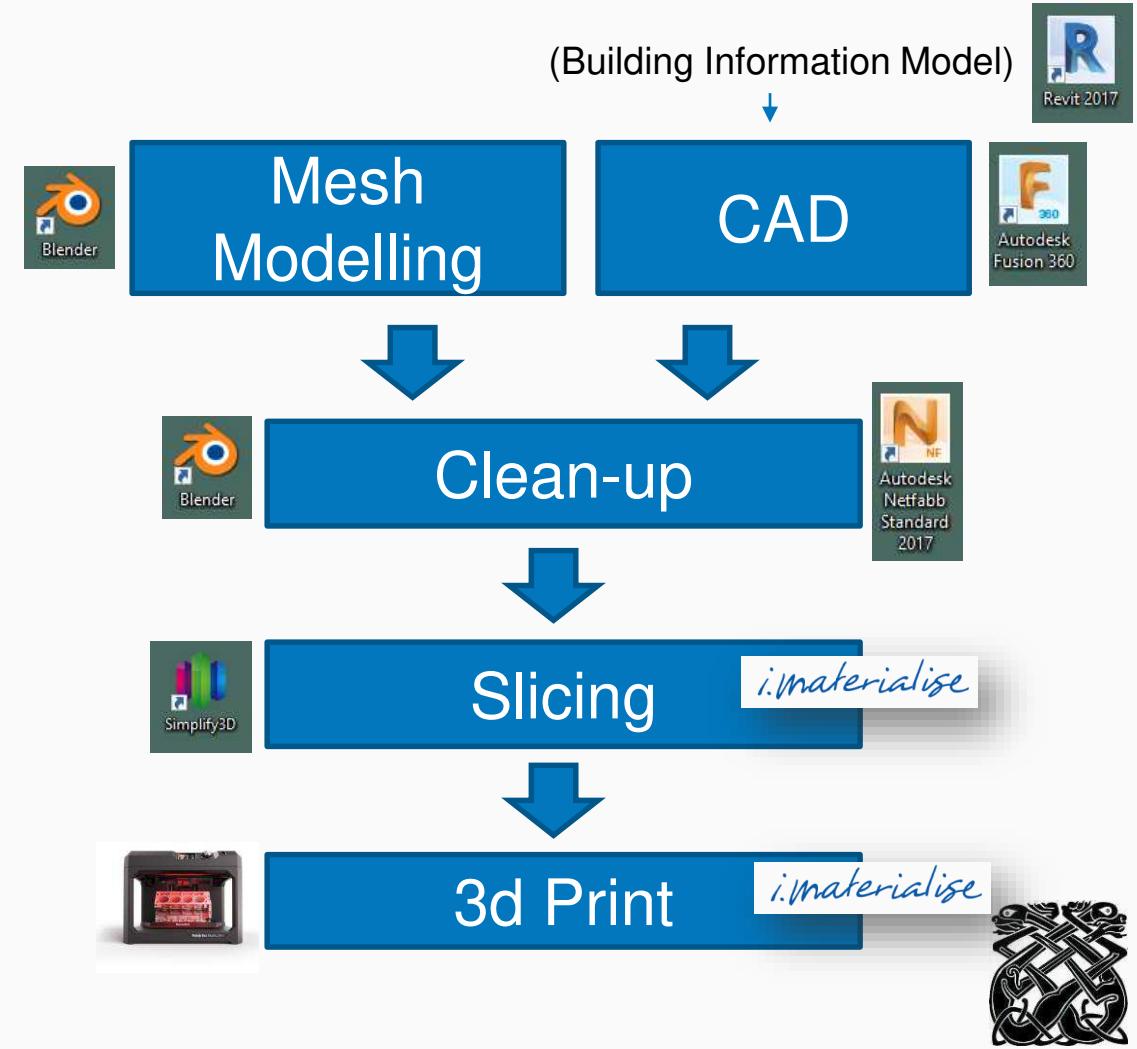
No overlapping geometry.

Minimum thicknesses allowable for the physical material and manufacturing process.

Maximum dimensions and an awareness of costs. (priced by volume^3)

Slicing

Generates the “toolpath” that the machine will follow.



3d Printing: Most Common Technologies

Fused Deposition Manufacture (FDM)

- Plastic Filament fed through a heated nozzle.
- Low risk. Lower surface quality. Need support structures. Consumer use.

Image: makerbot.com

Stereolithography (SLA)

- Photo-reactive resin is cured with a laser or beam of light one layer at a time. Recognizable by orange UV hood.
- Medium risk, clean-up can be messy, requires alcohol bath. Need support structures. “Prosumer” use.

Image: formlabs.com

Selective Laser Sintering (SLS) & inkjet 3d printing

- Layers of powder are melted (sintered) by laser. Used with plastics and metals. Inkjet also uses a powder-bed but jets liquid binder and can add colour.
- Medium risk, lasers and fumes. Expensive and large equipment. Powder needs careful handling. Powder provides support, more intricate shapes are possible. Industrial use.

Image: 3dsystems.com

Final notes:

Much faster than traditional manufacture, but not instant!

Print-times of 10 hours plus are common.

Nozzle size 0.4mm (fixed)
Layer height 0.2mm (adjustable)
Toolhead speed 6mm per second (default)

Upperkirkgate road = 44 layers, avg 122 seconds per layer = 1.5 hour print-time
Two Marishal Square: 431 layers, avg 96 seconds per layer = 11.5 hour print-time

3d printing is fun and accessible.

FDM Printer approx. £900. Online services via Shapeways.com , i.materialise.com.
Make Aberdeen, Belmont Street – 50% student discount rates.

Main skills needed, 3d modelling (Blender is free and open-source) and some mechanical aptitude if planning your own printer.

Questions?

Live Demonstration