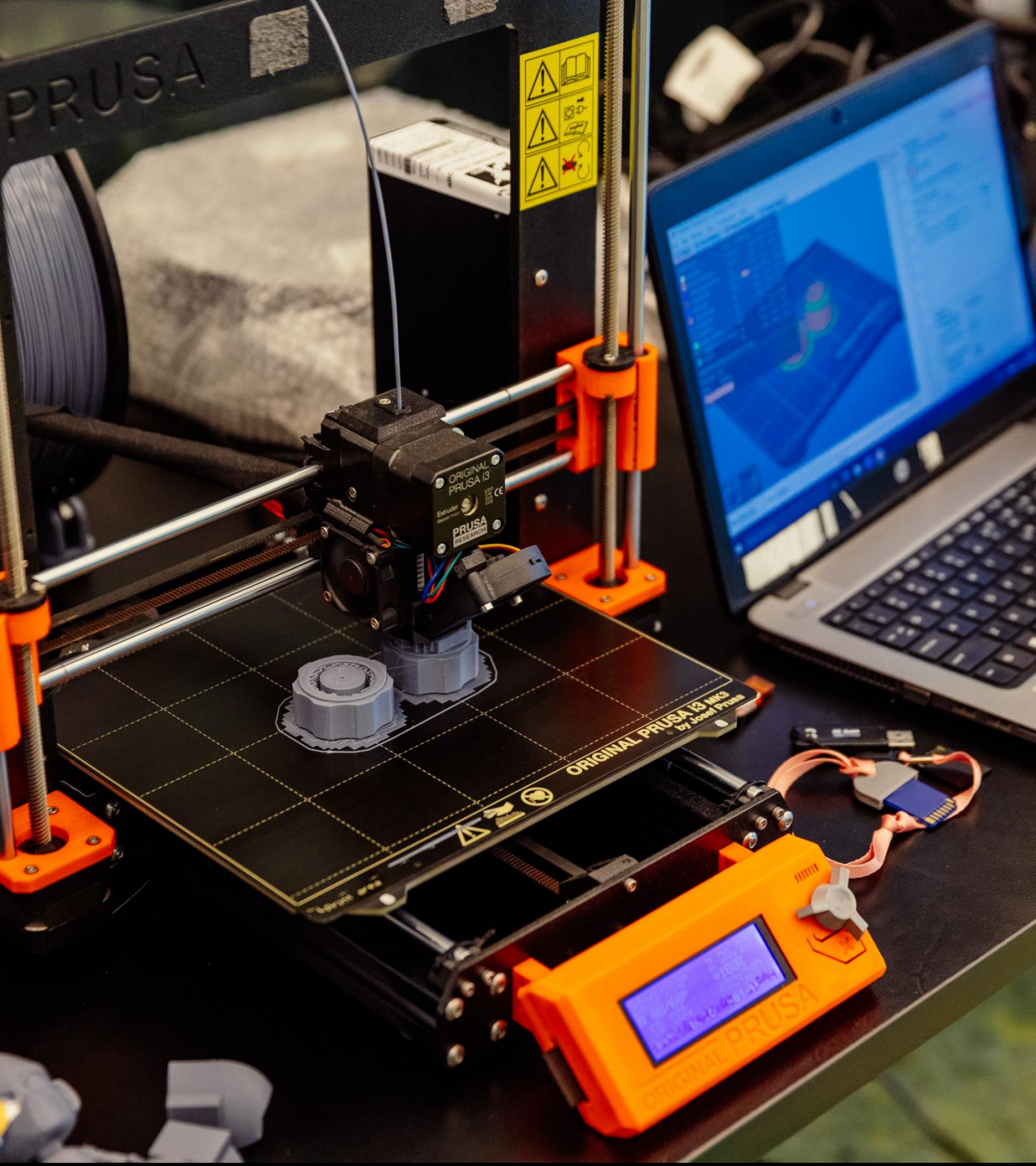


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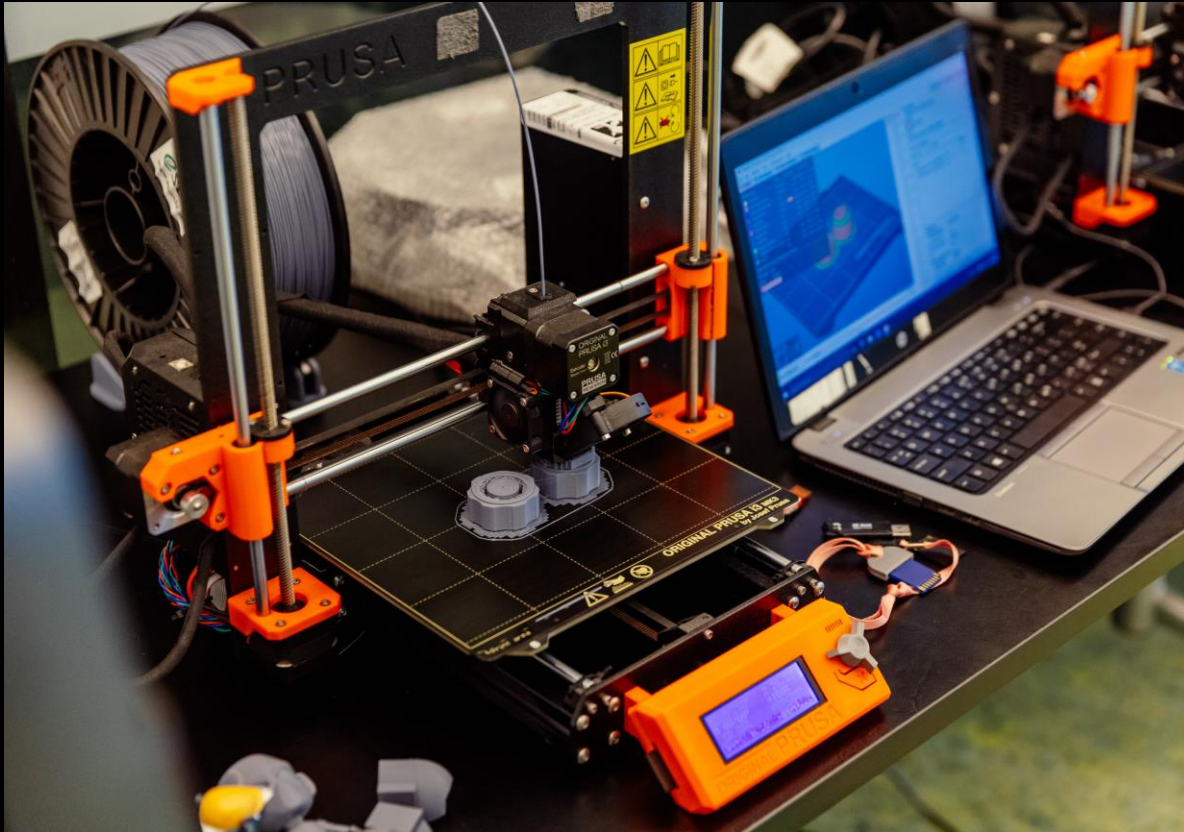
3D Printing 101

Designing content for printing on
The Edge 3D printers.



Acknowledgement of Country

We acknowledge Aboriginal and Torres Strait Islander peoples and their continuing connection to land and as custodians of stories for millennia. We respectfully acknowledge the land on which we all meet today, and pay our respects to elders past, present and emerging.



WORKSHOP SUMMARY

In this workshop we will deep dive into the creation process for designing content for printing on The Edge 3D printers.

After attending this session, you should have a better understanding of prepping your 3D models printed at the best quality, most efficient speeds and much more.

Open Lab sessions are a chance to meet up with like-minded makers and tinkerers at The Edge with facilitators to support your creative needs in the space.

Bookings are required to use the equipment and you will be able to book with your SLQ account once you have completed the relevant induction.

Wednesday 12pm – 5pm

Thursday 1.30pm – 8pm

Saturday 12pm – 5pm

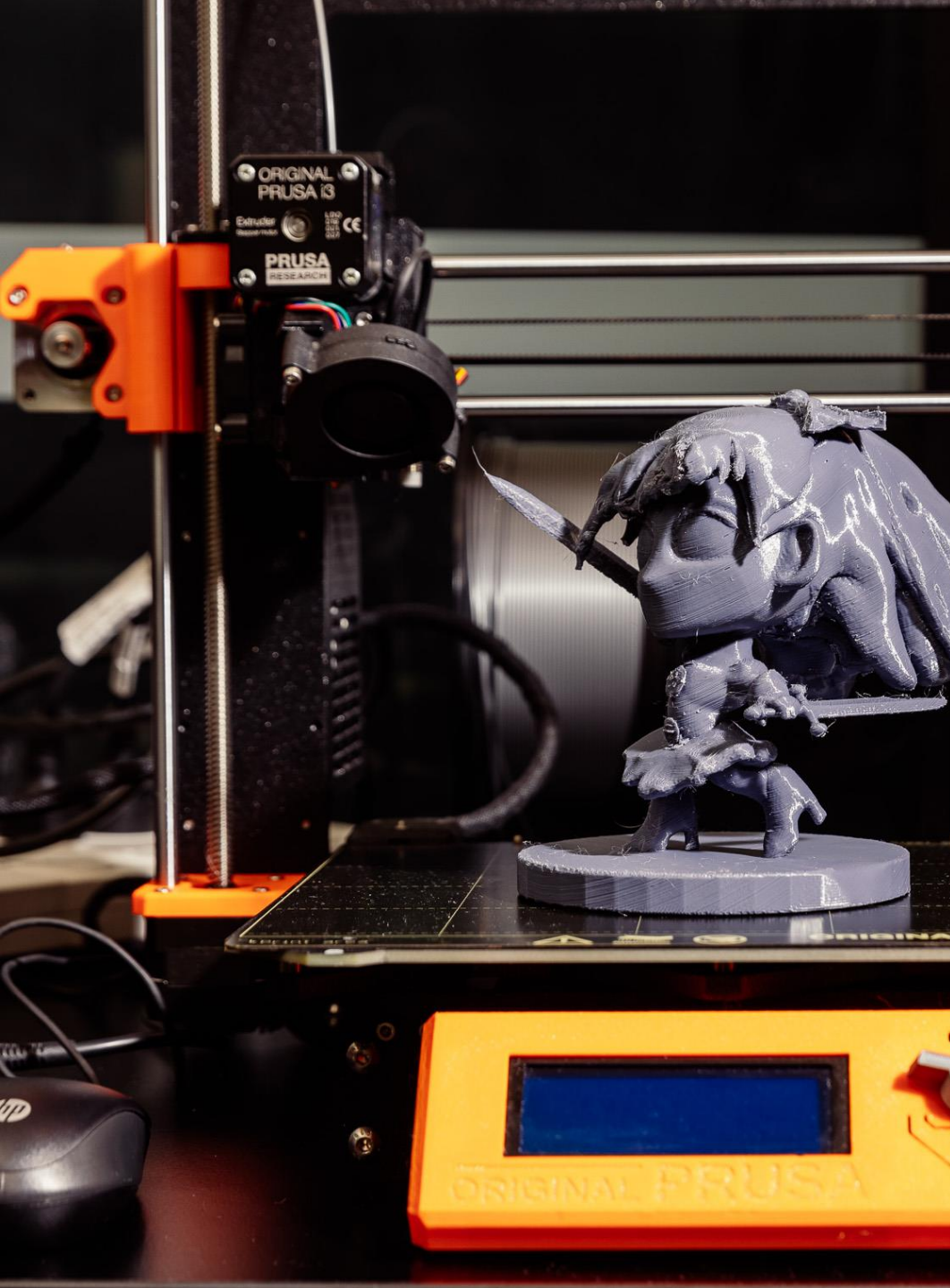
For more info and to book, head to <https://www.slq.qld.gov.au/visit/spaces/edge>

WORKSHOP SUMMARY

In this workshop we'll break the session down into 5 sections where we look at the things you can do to get the most out of your 3D printing efforts at each stage of the 3D printing process.

We'll work backwards in time starting by asking:

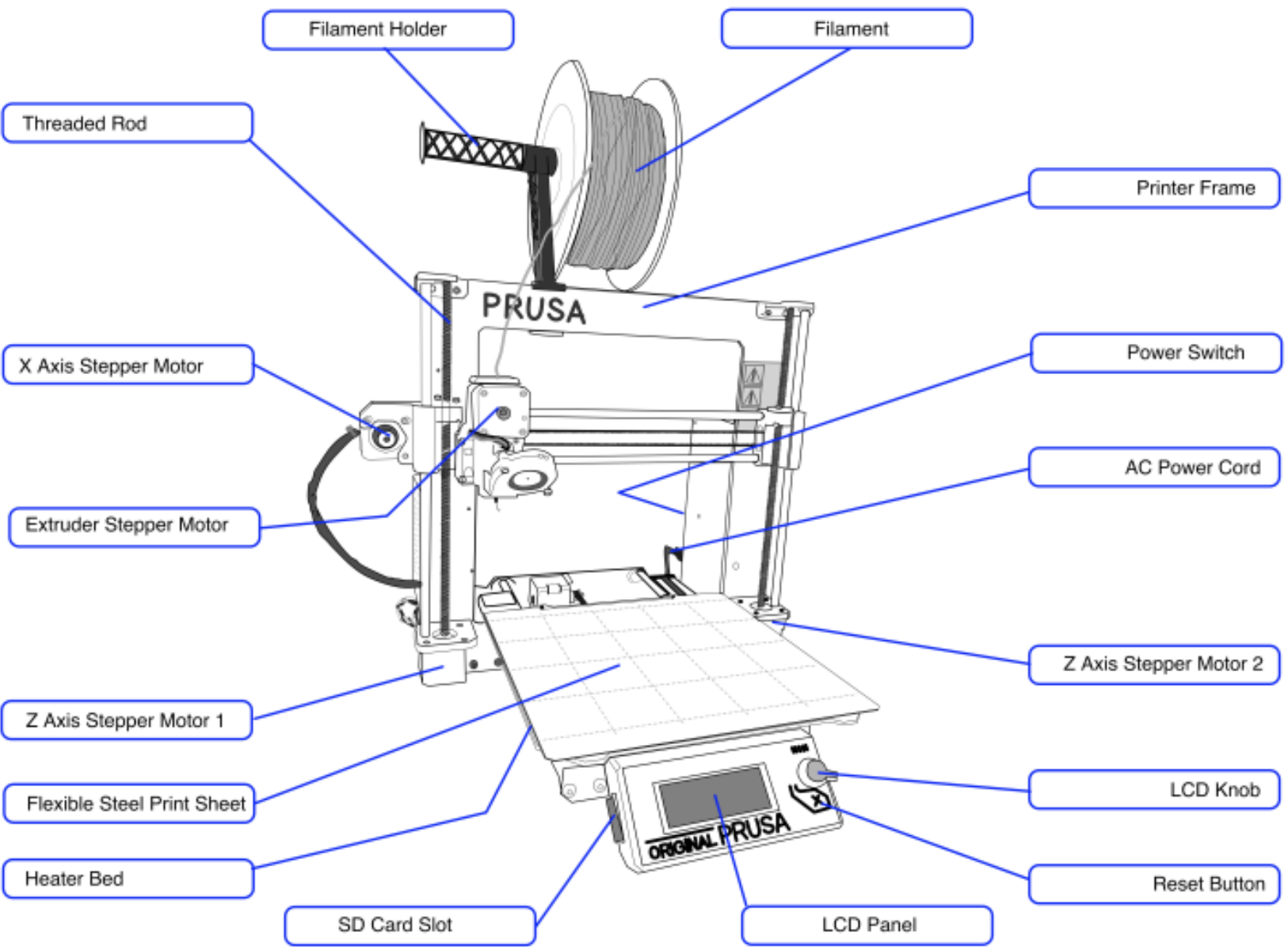
1. How you are going to use the print?
2. How much post print finishing and assembly do you want to do?
3. What you can do to make sure the printer does the best job?
4. What slicer settings you'll use to meet your needs?
5. How to design your parts to get the best possible 3D printing outcomes?



EQUIPMENT OVERVIEW

What is a 3D Printer?

- Allows for 3D printing which is the construction of a three-dimensional object. It does this through material being deposited, joined or solidified under computer control.
- The Edge has 5 Prusa model i3 MK3s+ printers, which are the successor to Original Prusa i3 MK3 and feature hardware and software upgrades offering improved reliability and ease of use.

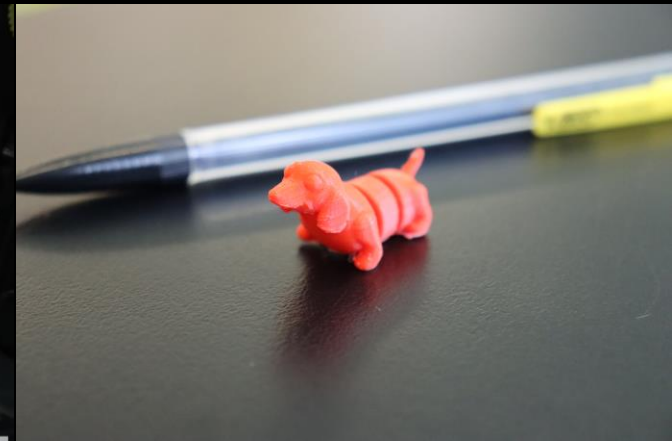
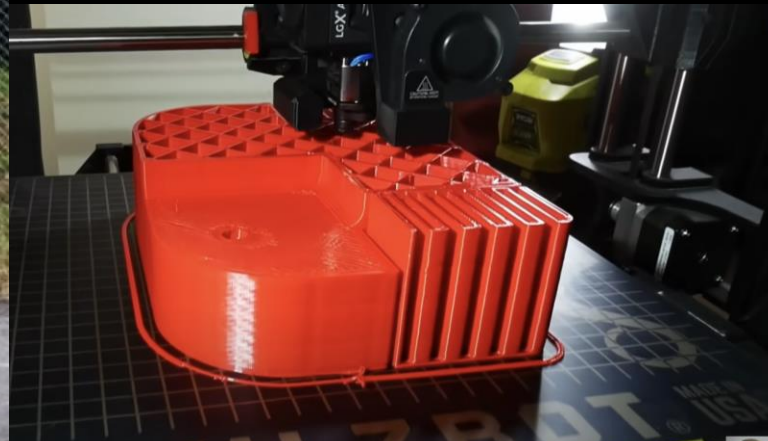
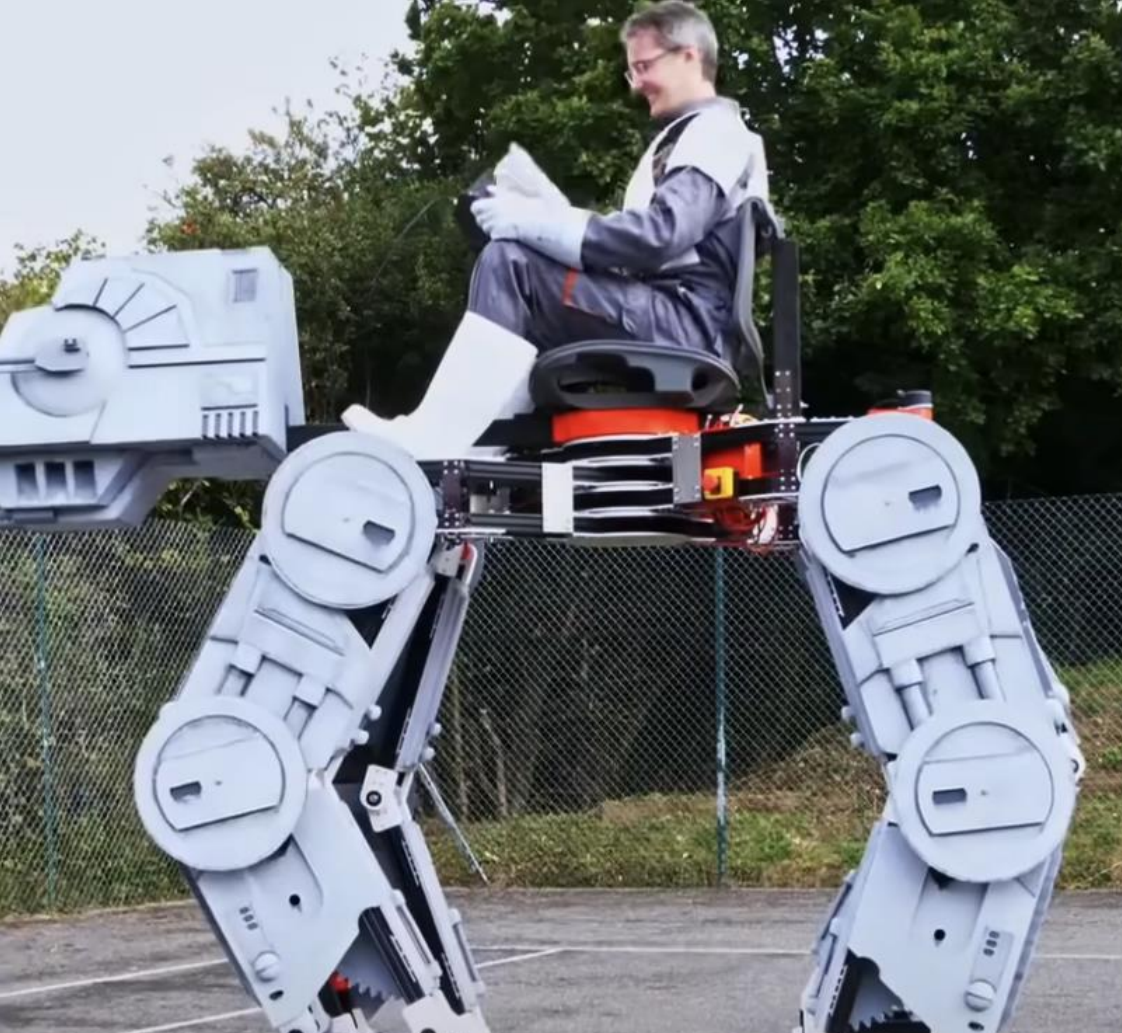


MACHINE OVERVIEW



But first

What's a reasonable thing to try and make on the 3D printers at The Edge?



Designing for 3D Printer

Fusion 360

Pros

- Powerful professional CAD, CAM, CAE software
- Lots of good tutorials online
- Great for designing close tolerance mechanical parts
- Free hobbyist licence available

Cons

- Quite complex for those just starting out
- Full version relatively expensive (but not as expensive as others)

Designing for 3D Printer

Meshmixer

Pros

- Free
- Great software for sculpting 3D
- Good for repairing models made in other programs

Cons

- Probably want to try something more intuitive first to get your head around the concepts

Designing for 3D Printer

Blender

Pros

- Free and open source
- Great software for all types of 3D modelling and animation
- Lots of tutorials and guides online

Cons

- Probably want to try a simpler software first to get your head around the concept of 3D design

Designing for 3D Printer

TinkerCAD

Pros

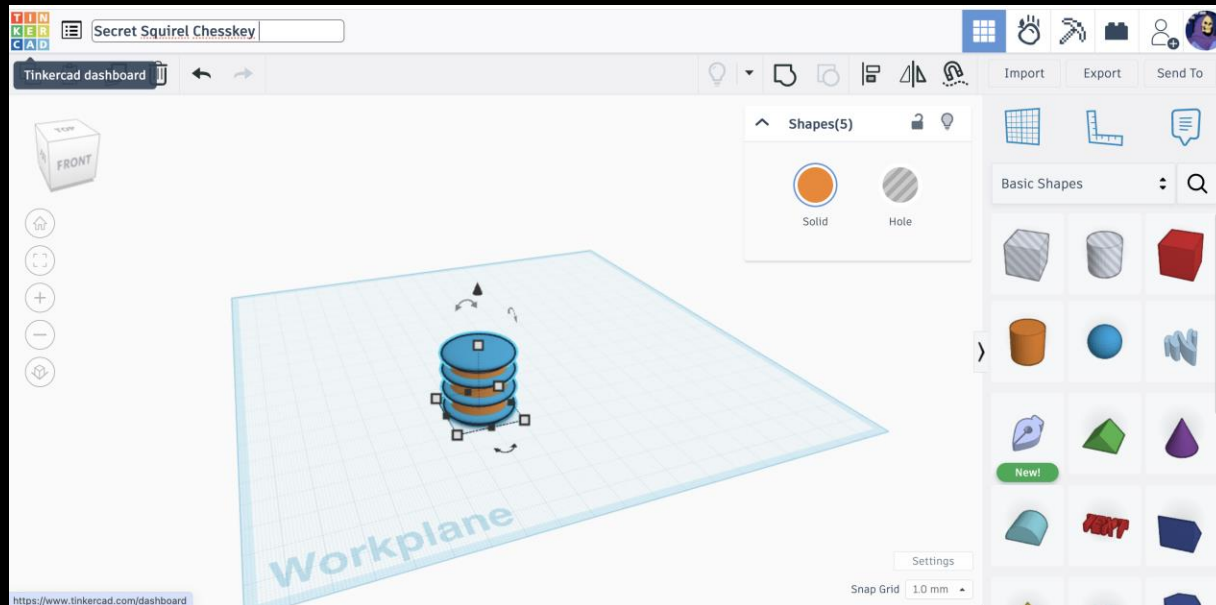
- Free
- Great intuitive software for getting started
- Browser based

Cons

- Experienced designers might get frustrated with the lack of features

Tinkercad refresher

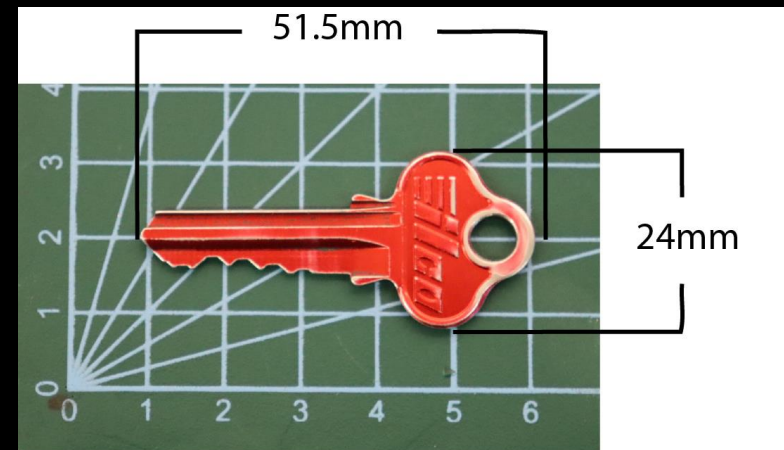
- Navigating space.
- Combining shapes.
- Imports and exports



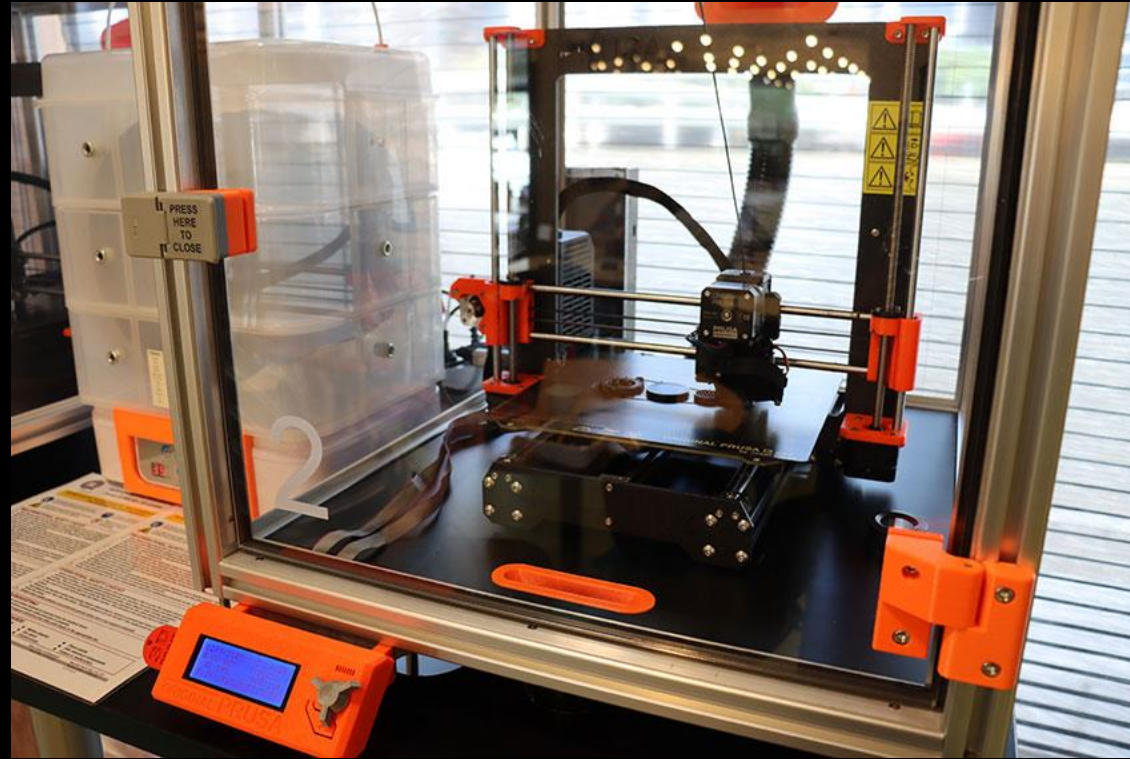
Brief

Use tinkercad to quickly design a chess piece to hide a key.

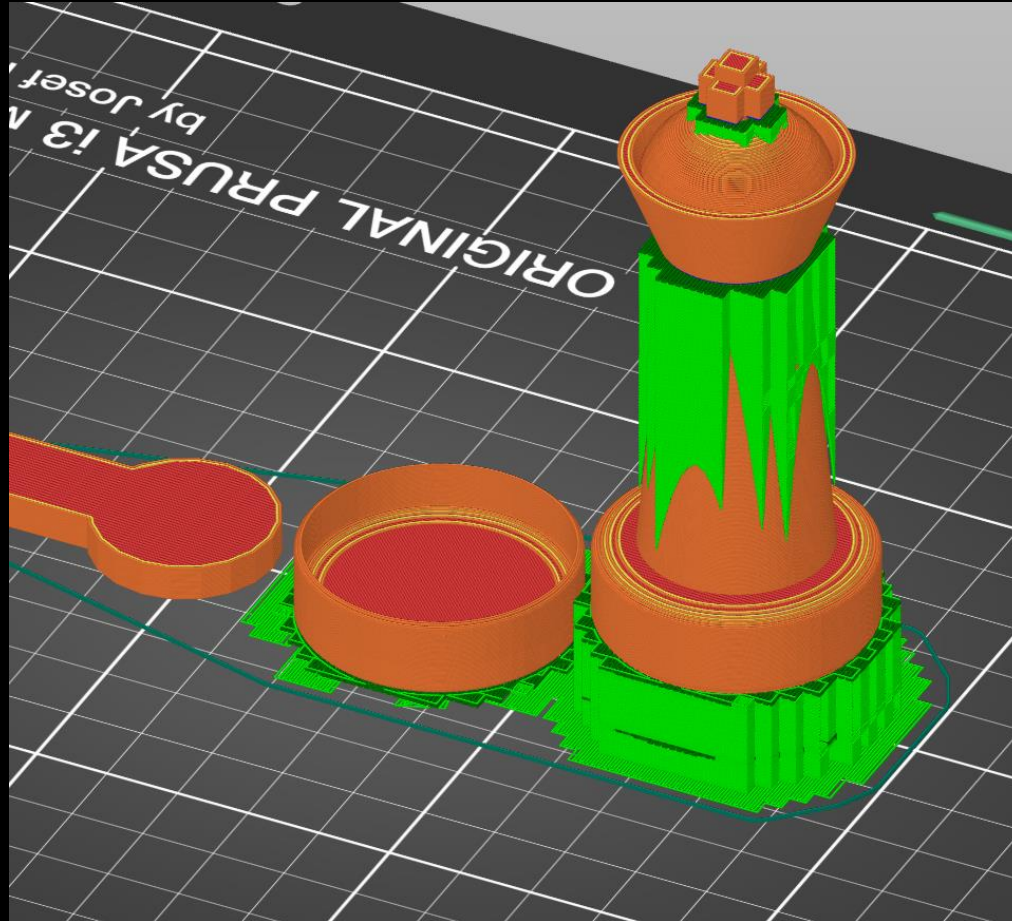
You have 10 mins





1. How are you going to use the print?







2. How much post print finishing and assembly do you want to do?







3. What you can do to make sure the printer does the best job?

Expert mode  Log in 





Print settings:


  0.20mm QUALITY (modified)  


Filament:

  Esun PLA  

Printer:

  Original Prusa i3 MK3S & MK3S+  

Supports: 

Infill:  Brim:

4. What slicer settings will you use?



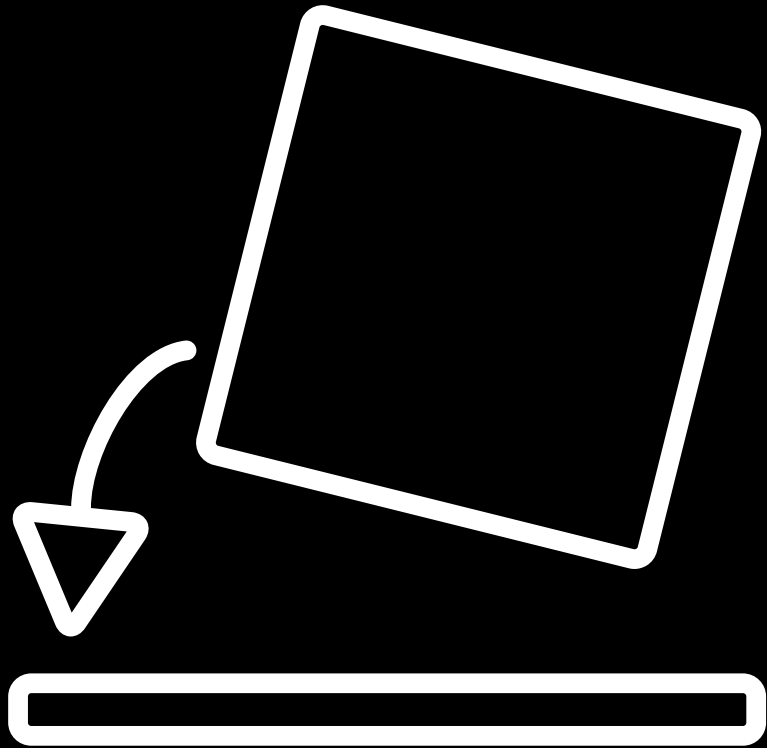
4. Slicer settings

Repair holes open edges and inverted surfaces



4. Slicer settings

Orient object on print plate



4. Slicer settings

Sinking objects



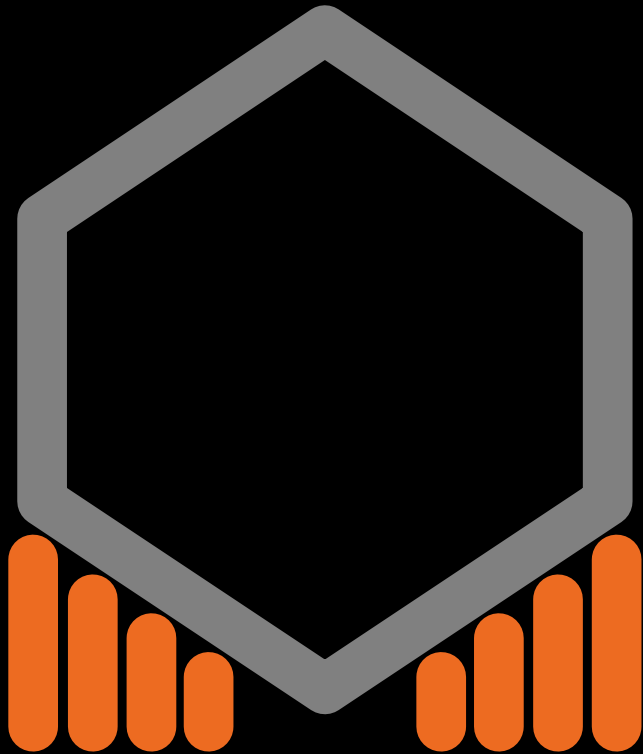
4. Slicer settings

Perimeter count verses infill



4. Slicer settings

Types of supports



4. Slicer settings

Do you want a brim



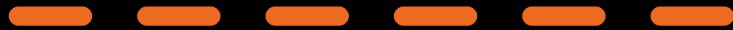
4. Slicer settings

WARNING: detected print stability issues: [\[More\]](#)



4. Slicer settings

Cutting models to eliminate or reduce supports



4. Slicer settings

Variable layer heights



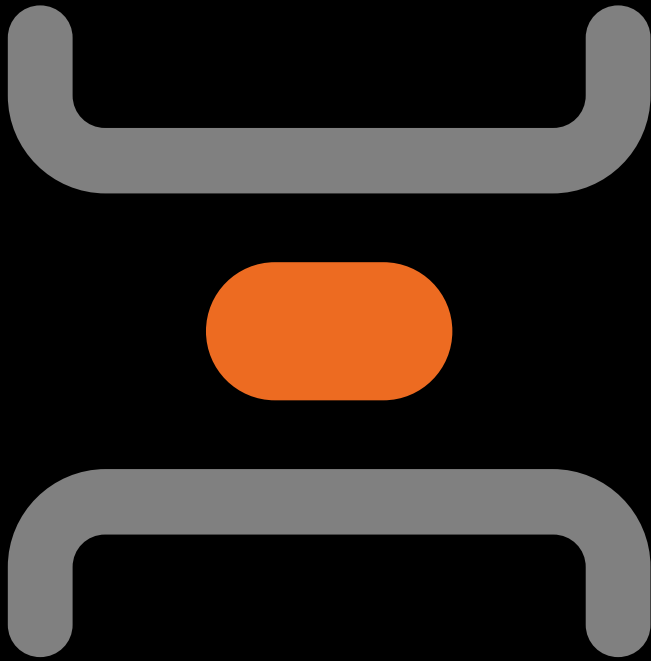
5. Design for 3D printing

Fillets and Chamfers



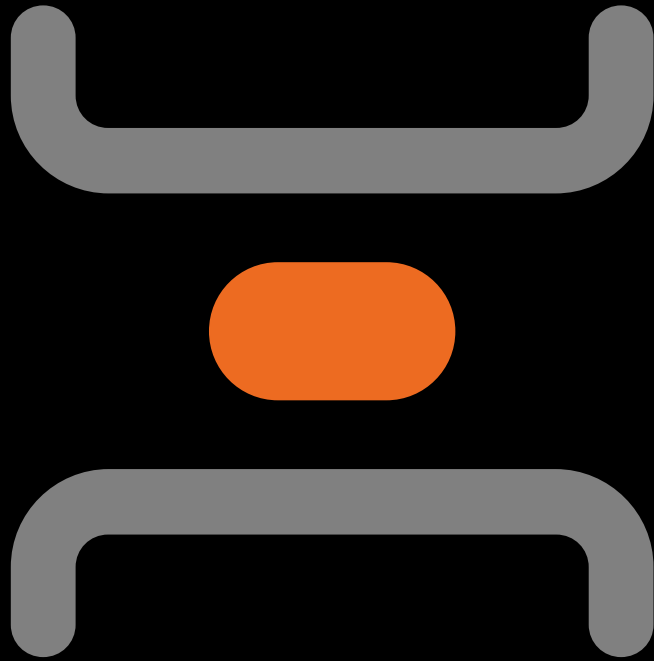
5. Design for 3D printing

Design your object in parts for later assembly

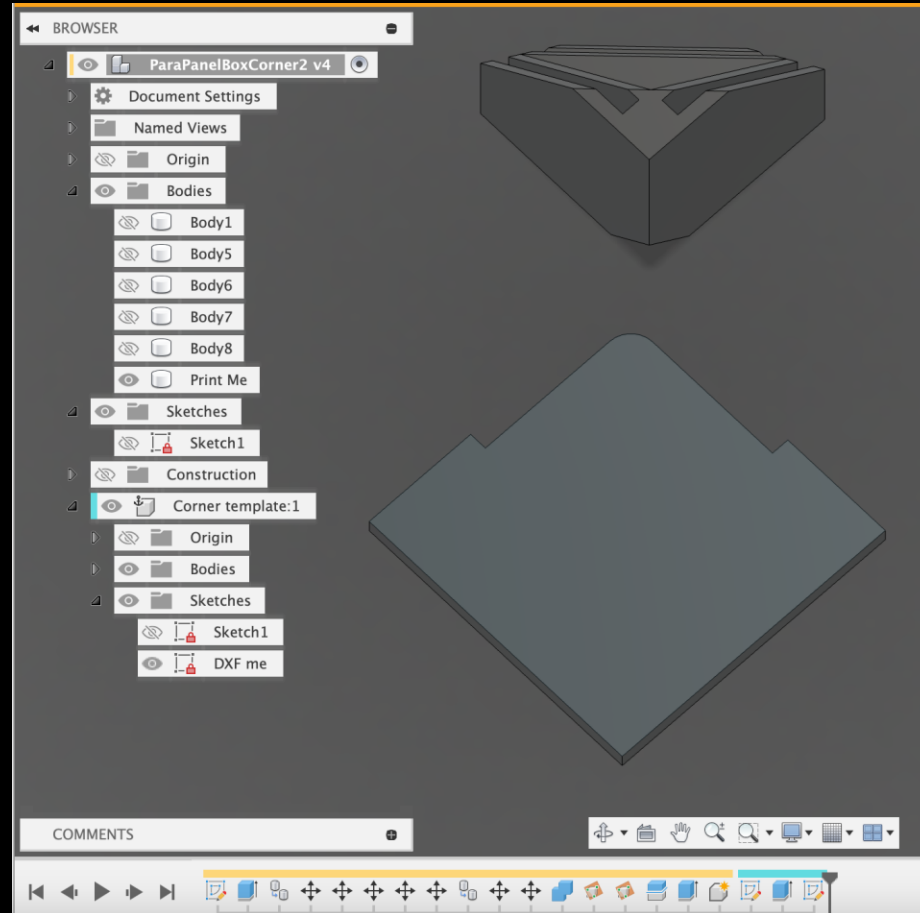


5. Design for 3D printing

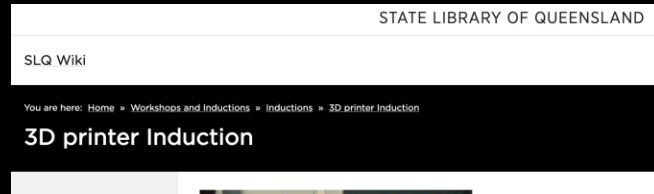
Locators



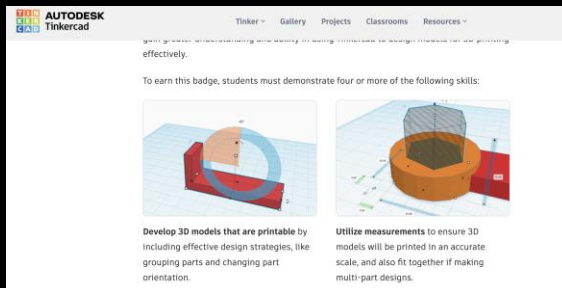
5. How you can design your parts to get the best possible 3D printing outcomes?



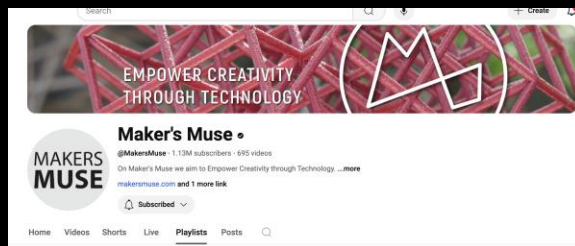
More learning resources



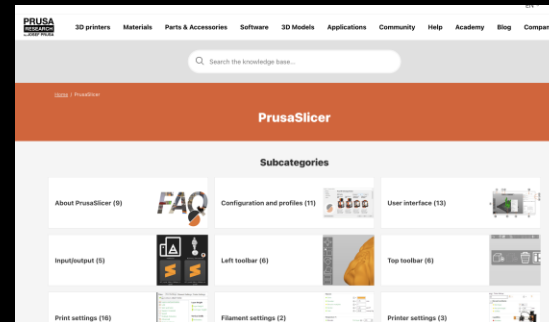
Wiki.slq.qld.gov.au



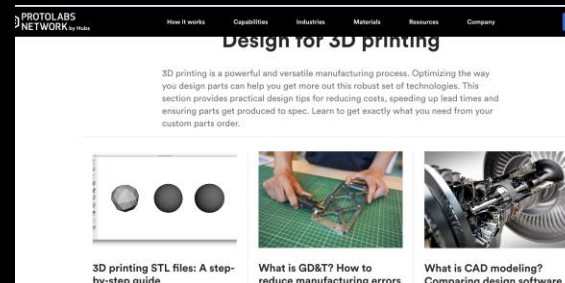
tinkercad.com/skills/3d-printing



youtube.com/@MakersMuse



[PrusaSlicer | Prusa Knowledge Base \(prusa3d.com\)](http://PrusaSlicer | Prusa Knowledge Base (prusa3d.com))



hubs.com/knowledge-base/design-for-3d-printing/



<https://teachingtecht.github.io/>

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