

How digital technologies can relate to my practice?

# Module 3: Other Applications.

**CREATED FOR**

Craft 4.0 - Digital Craft  
[www.craftproject.eu](http://www.craftproject.eu)

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## The Partners.

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# Module Aim.

## What, Why, How long?

### **What?**

To provide an introduction of 3D modeling capabilities, highlighting the potential in creating intricate shapes & complex forms that are not feasible through traditional means.

### **Why?**

To outline how digital technologies can add value to existing practices, i.e. exploration of scale, multiplicity and reproduction/ adaptation in finished craft objects. As well as, the ability to create personalized tooling, molds and supports that can assist in the making & prototyping phase of your work.

### **How long?**

This module will include six presentation units which have an estimated reading time of 30 minutes each. You will be provided with other examples that relate to specific craft sectors.

### **Note**

All components seen within the documents have been used with the permission of the creator.



## Other Applications.

Introduction to the discipline.

**“A collection of alternative crafts & techniques that have not been listed, as well as examples to different available sources.”**

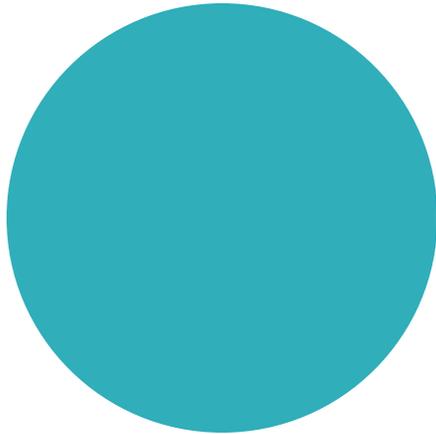
This collection includes techniques such as:

1. Culinary Art
2. Confectionery Art - Chocolatier
3. Candle Making
4. Cultural Artifacts & Sculptures
5. Tabletop games
6. Guide to machinery & resources

“ How might digital technologies **enhance** the **abilities** of **other** alternative **crafts**, **supporting** their production process & **creation of unique products?** ”

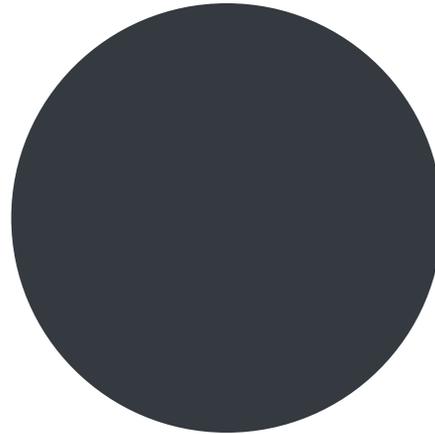
# Areas Of Adaption.

Adding value across all stages of the crafting process.



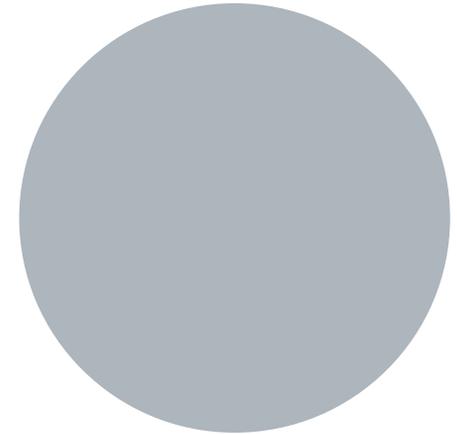
## USE CASE SAMPLES

Culinary & Confectionary examples  
Decorative examples  
Other use cases



## DESKTOP MACHINERY

Desktop 3D printers  
Vacuum forming machines  
CNC & laser based machines



## SOFTWARE

Solid CAD modelling  
Digital sculpting  
3D slicing software

## TOPICS COVERED

Culinary & Confectionary examples  
Decorative examples  
Other use cases

# 01. USE CASE SAMPLES.

## Custom Candle Moulds.

Adapted from Makyu Blogs.

Anna & Tatiana uses the **Makyu FormBox** vacuum forming machine to create **custom moulds for candles** and wax. The Nata Concept Team **wanted to create products** that are **not available in stores**. By using the FormBox, they were able to develop products that would combine their vintage aesthetic with handmade eco-friendly candles.

With help from **Anna's Father**, who has knowledge in **3D modelling and 3D printing**, they were able to **combine both technologies** to develop mould designs. This **allowed them to test and validate their ideas** quickly before committing to any costly materials or time on an idea that may not work.

"CANDLE MOULD DESIGN" BY NATA CONCEPT STORE  
<https://www.instagram.com/nataconceptstor>  
<https://nataconceptstore.com/>



## Universal Design.

ThisAbles project creating add ons to Ikea products.

The ThisAbles project was created to allow **individuals with special needs** to **enjoy the quality** of life provided by **Ikea products**.

This project was a **collaboration with non-profit organisations** Milbat & Access Israel, who specialize in developing solutions for the population of those with special needs and disabilities. These **3D printable models bridge the gap** between existing **Ikea products** and this **target group**.

The **designs** have been made available to download for free to **the general public** helping create a better everyday life for as many people as possible.



"3D PRINTED IKEA ADD ON" BY THISABLES  
<https://thisables.com/en/>

# ThisAbles Samples.

3D files available to download.



"EASY-PULLER" BY THISABLES  
<https://thisables.com/en/new-developments/easy-puller/>

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"INSIDER" BY THISABLES  
<https://thisables.com/en/new-developments/insider/>

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"BAG-HANDLER" BY THISABLES  
<https://thisables.com/en/new-developments/bag-handler/>

OTHER APPLICATIONS

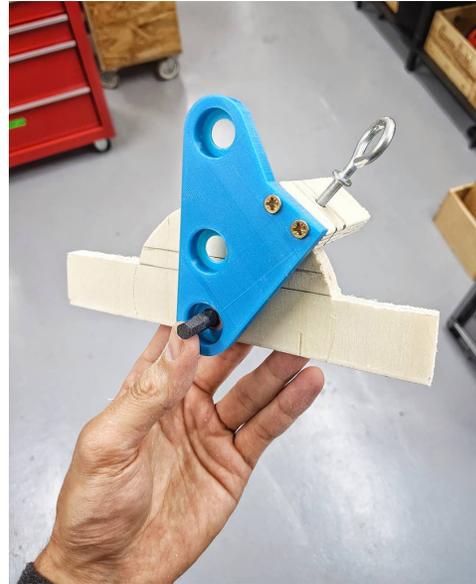
## Croissant Machine.

3D printed dough sheeter.

Alex, also known as **“French Guy Cooking”** developed a **3D printed dough sheet roller** for his “Croissant Series” where he learns about the process of croissant making and developing the perfect croissant. In doing so, Alex found **his equipment was unable to perform the task** of flattening of dough correctly and **decided to build his own.**

The design runs through **iterations of test prints** with his **in-house Prusa Mk3s** and the files are available to download for those who want to make the machine. At a later video, the machine can be seen **used in his beef wellington video** where he created the puff pastry for the dish. Alex has used a **Makyu FormBox** during his development of his pain du chocolat **to create moulds** for the **chocolate component of the pastry.**

“3D PRINTED CROISSANT MACHINE” BY ALEX AÏNOUZ  
[https://www.youtube.com/watch?v=\\_2elZ3a\\_hrw](https://www.youtube.com/watch?v=_2elZ3a_hrw)  
<https://www.instagram.com/frenchguycooking/>



# Artifact Replications.

Adapted from Prusa Stories.

In Prague, an **exhibition** called “Between Prague and Cairo” was created to **celebrate the 100 year anniversary** of the Czech Institute of Egyptology and **depicts many milestones** of the institute.

As **artifacts cannot leave the country** they are discovered in by the country law, **archeologists** would have to **produce detailed drawings, descriptions and photos**. However, recently with the **advancements in 3D scanning** and 3D printing, **replicas could be produced**. This opens up opportunities for the **visitors** to **touch the pieces without worry** that it is the original.

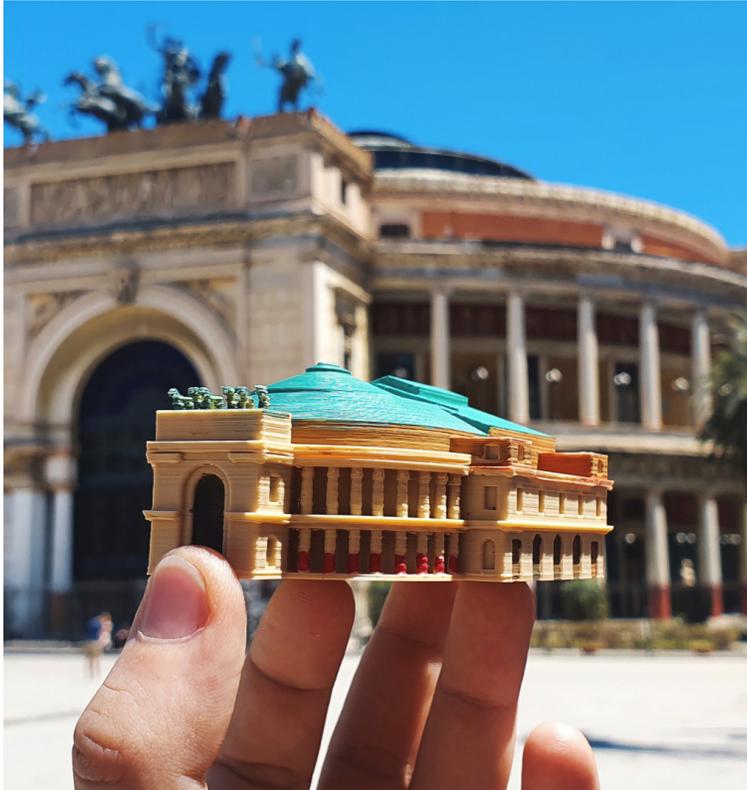
**MiniWorld3D** is also a different project that **allows the blind** to **feel different landmarks** around the world that they may not see otherwise. However, that project is solely CAD modelling and 3D printing.



“ARTIFACTS FOR EXHIBITION” BY BETWEEN PRAGUE AND CAIRO  
<https://www.prusa3d.com/prusa-3d-printing-stories-artifacts-for-between-prague-to-cairo-exhibition/>

# MiniWorld3D Samples.

3D files available to download.



"POLITEAMA THEATER - SICILY" BY MINIWORLD3D  
<https://www.myminifactory.com/object/3d-print-politeama-theater-palermo-sicily-132596>



"TEATRO MASSIMO - SICILY" BY MINIWORLD3D  
<https://www.myminifactory.com/object/3d-print-teatro-massimo-palermo-sicily-125772>



"CHURCH OF SAN CATALDO - SICILY" BY MINIWORLD3D  
<https://www.myminifactory.com/object/3d-print-church-of-san-cataldo-sicily-italy-123009>

## TOPICS COVERED

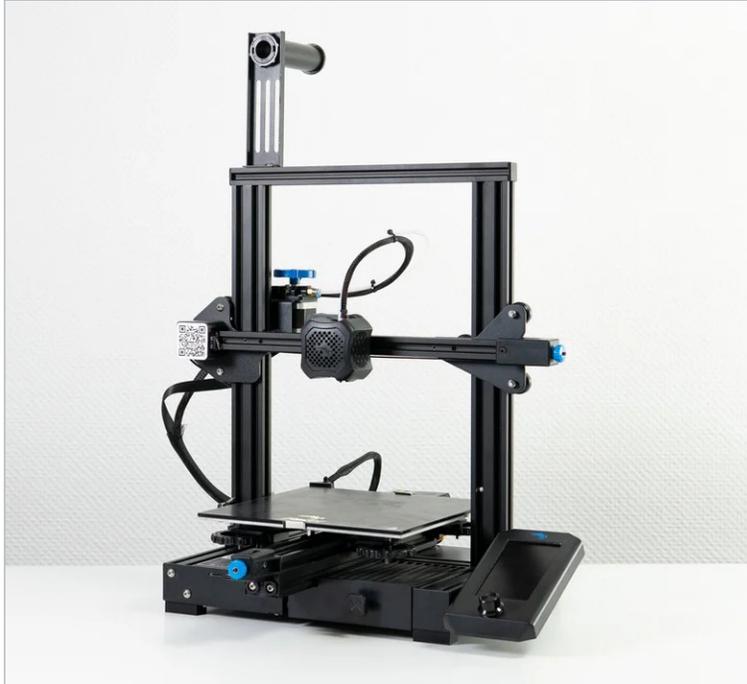
Desktop 3D printers  
Vacuum forming machines  
CNC & laser based machines

# 02. DESKTOP MACHINES.

# FDM 3D Printers.

Sample of FDM style 3D printers (filament-based).

*Disclaimer: The purpose of showcasing these products are to indicate what is available on the market, however, Craft 4.0 is not responsible for any purchases, damages or issues that may arise from the reader's actions.*



## CREALITY ENDER SERIES

A budget friendly machine with a large print volume. The Ender 3 series, allows makers to upgrade the machine with added purchases or 3D printed components.

<https://www.creality.com/>

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## PRUSA MINI+

A compact yet reliable 3D printer, suitable for small scale print farms. The Prusa series comes in kits or fully assembled, producing high quality prints easily.

<https://www.prusa3d.com/original-prusa-mini/>

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## PRUSA MK3S+

The larger printer from Prusa with a reputation for print quality & reliability. A direct-drive printer that go hand-in-hand with Prusa's Prusament filament.

<https://www.prusa3d.com/original-prusa-i3-mk3/>

OTHER APPLICATIONS

# SLA 3D Printers.

Sample of SLA style 3D printers (resin-based).

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## **ELEGOO MARS 2**

A budget friendly machine that produces higher quality prints than FDM printers. SLA process involves a wash & curing machine, therefore, being a more costly process.

<https://www.elegoo.com/>



## **ANYCUBIC PHOTON MONO X**

A larger scale printer for those who want larger print volumes. SLA printing also require good ventilation due to the resin fumes that emit whilst printing.

<https://www.anycubic.com/>



## **PRUSA SL1S SPEED**

Prusa's SLA printer which prints three times faster than most on the market, while maintaining high detail and print quality with integrated safety features.

<https://www.prusa3d.com/original-prusa-sl1/>

# Other Machinery.

Examples of other machines makers may use.

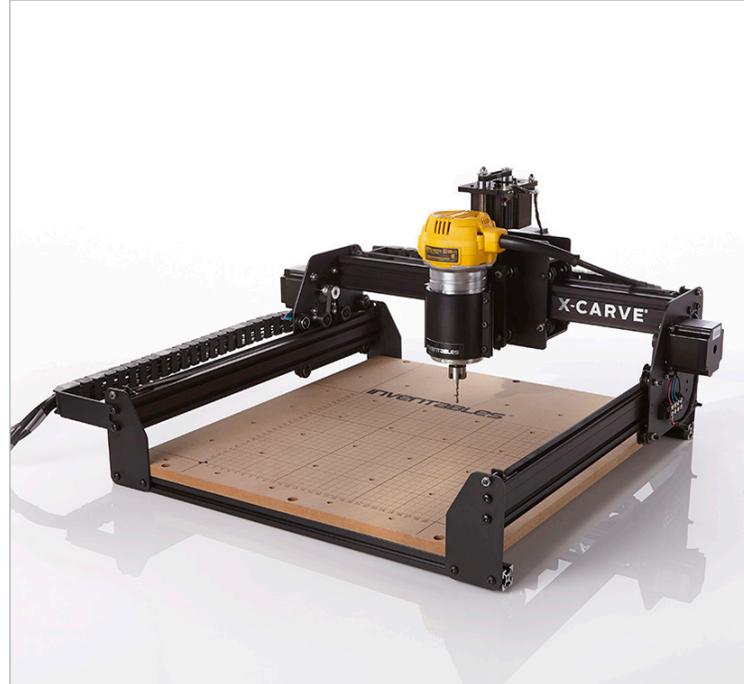
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## MAKYU FORMBOX

A desktop vacuum forming machine, allowing makers to create moulds, blister packaging and rapid prototyping ideas in-house.

<https://www.mayku.me/>



## INVENTABLES X-CARVE SERIES

A CNC machine that allows makers to cut their designs in their home. The x-carve series includes their own interactive carving software suitable for beginners.

<https://www.inventables.com/>



## GLOWFORGE SERIES

A laser-cutter that can etch, score or cut through a range of sheet materials, allowing makers to create personalised branding & products with 2D plans.

<https://glowforge.com/>

# Papercraft Machines.

Scoring and cutting paper/vinyl materials.

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## CRICUT SERIES

A range of cutting machines that can cut different designs from paper, vinyl, card stock or iron-on transfer sheets. Depending on the machine, some cut leather & textiles. The tool heads can be swapped from knives to scoring and markers.

[https://cricut.com/en\\_us](https://cricut.com/en_us)



## SILOHUETTE SERIES

A precision cutting machine that allows you to cut fabric patterns, create custom stickers that could be used for branding or score sheets of paper. A built in roller feeder allows makers to cut rolled materials up to 18 metres in length.

<https://www.silhouetteamerica.com/>

# Outsourcing Printing.

Print-on-demand services available.

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**THE HUBS**

<https://www.hubs.com/>



**SHAPEWAYS**

<https://www.shapeways.com/>



**SCULPTEO**

<https://www.sculpteo.com/>

## **PRINTING ON DEMAND**

The listed labs provide makers who do not have access to in-house machinery to print their designs in a number of available materials from plastics to metal. Each site provide an instant estimated quote for your desired prototyped components.

## TOPICS COVERED

Solid CAD modelling  
Digital sculpting  
3D slicing software

# 03. SOFTWARE SAMPLES.

# CAD Software.

Solid modelling programmes for makers.

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## TINKERCAD

A free-of-charge online 3D modelling software targeted towards entry-level makers with lessons that will teach you the basics to more complex techniques.

<https://www.tinkercad.com/>



## AUTODESK FUSION 360

A cloud-based 3D modelling software with more features to develop complex products and creating 2D drawing plans of your idea. Product rendering is available.

<https://www.autodesk.com/products/fusion-360/personal>



## SOLIDWORKS

An industry standard CAD software that operated alike Fusion 360 with added tools and design features. The licence may be costly for makers with small production.

<https://www.solidworks.com/>

# CAD Software.

Digital sculpting & surface modelling programmes for makers.

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## **BLENDER**

A free and open-source 3D modelling software that enabled makers to build geometric surface models and sculpt organic designs.

<https://www.blender.org/>



## **ZBRUSH**

A digital sculpting tool that allows makers to build unique character designs and apply materials, colours and textures for rendering.

<https://pixologic.com/>



## **RHINOCEROS 3D**

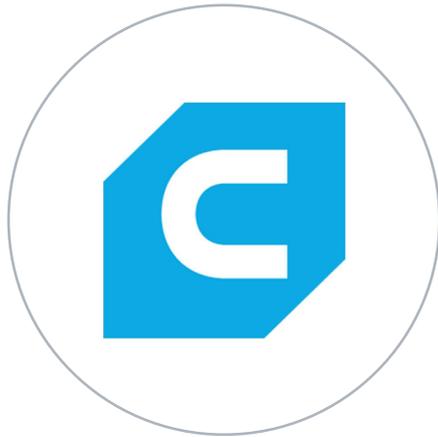
An industry standard CAD software that allows makers to digitally model their ideas with the use of surfaces and NURB control.

<https://www.rhino3d.com/>

# Slicing Software.

Software required to prepare 3D print models.

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## CURA

An open-source slicing application for FDM style 3D printers, providing the maker with the ability to add extensions/ plugins to the software.

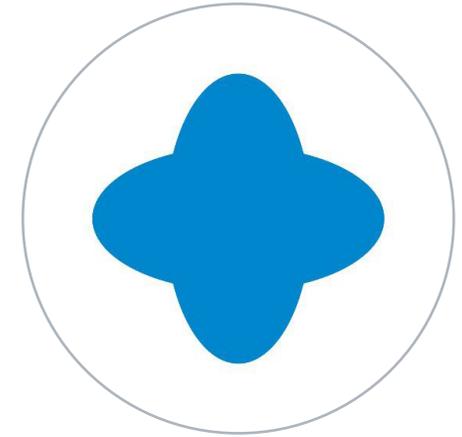
<https://ultimaker.com/software/ultimaker-cura>



## PRUSASLICER

Prusa research in-house developed slicer that is suitable for the prusa series & ender 3, however, other profiles can be made to suit the 3D printer of choice.

<https://www.prusa3d.com/prusaslicer/>



## CHITUBOX

A slicing software directed towards SLS, DLP and LCD resin-based 3D printing, giving the maker great control over their print settings with a simple interface.

<https://www.chitubox.com/en/index>

"Well done on getting to the end of this lesson!"

# Conclusion to: Other Applications.

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learn more?**

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[www.craftproject.eu](http://www.craftproject.eu)

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