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Copyright, 3D Printing, and the Value of Open Vetted 3D OER

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Copyright, 3D Printing, and the Value of Open, Vetted 3D OER

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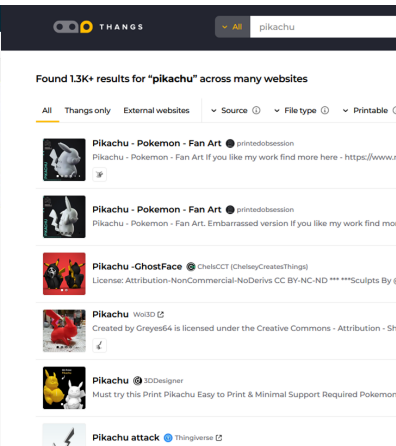
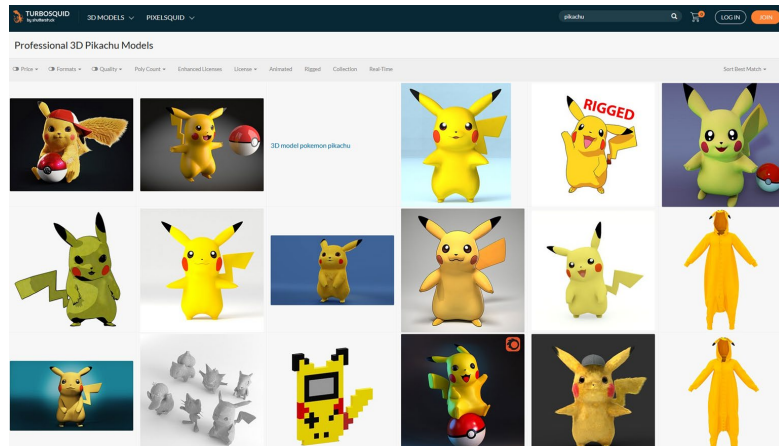
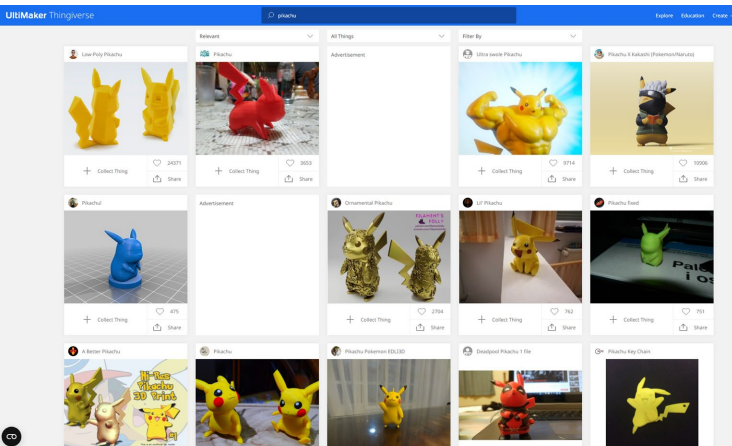
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Georgia Southern University Libraries
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Head of Systems and Technologies
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Statesboro, Georgia

Introduction

Did you pre-register for the free
3D printed Pokemon?



Session Goals

- Examine limitations and concerns about self-serve 3D printing in libraries
- Explore U.S. Copyright Law and potential liability libraries hold when offering 3D printing services
- Outline issues with copyright and infringement in the 3D printing community
- Review examples of vetted 3D models currently available online
- Discuss the benefits of creating OER repositories of vetted 3D models

3D Printing vs. Conventional Printing Concerns

*Self-serve printing affords copyright protections, **but:***

- 3D printers can be damaged or uncalibrated due to tampering
- 3D printers are finicky and require expertise to operate effectively
- 3D print jobs take hours to complete and must be monitored
- Troubleshooting 3D print errors requires expertise
- 3D printing materials can be hazardous and must be regulated
- 3D print model files are often copyrighted intellectual properties (IPs) and library may be liable for copyright infringement

Mitigating 3D Printing Concerns

- Access to 3D printers should be regulated and limited to trained staff only
- Safety guidelines should be documented and prominently posted
- A 3D print request system should be established
- Effective and efficient 3D printing workflows should be created
- 3D print files must be vetted for copyright violations by qualified reviewers

Copyright Assessment: Liability

– Infringement?

- Since 3D printing in MakerSpaces and other similar library services are often mediated and not self service, displaying a notice near the 3D printer based upon the Copyright §108(f)* exemption may not fit well to minimize library liability.
- Libraries must assess the risk of printing copyrighted works and rely on permission by the author/rights holder or apply a Copyright §107** fair use analysis.
- Need to review related U.S. Copyright Law § 102, 106, 107, 108, and 512 to better understand viable options for liability.

* 17 U.S. Code § 108 - *Limitations on exclusive rights: Reproduction by libraries and archives*

** 17 U.S. Code § 107 - *Limitations on exclusive right: Fair use*

Copyright Assessment: So what's protectable?

Copyrighted subject matter § 102* is automatically protected if and when:

- Original work of authorship
- With a modicum of creativity
- Fixed in a tangible medium of expression

Copyrighted CAD software designs from a repository or copyrighted physical objects such as a **sculptural figures or architectural works** are examples of subject matter protected by § 102.

CAD software files could be categorized as **pictorial, graphic, or literary works**.

*17 U.S. Code § 102 - Subject matter of copyright: In general

Copyright Assessment: Owner's Rights?

Copyright owner's exclusive rights § 106* to:

- Reproduce the work
- Make derivative copies
- Distribute copies to the public
- Display and perform in public

*17 U.S. Code § 106 - Exclusive rights in copyrighted works

Copyright Assessment: Infringement of Owner Rights?

Potential infringement when a library customer violates any of the exclusive rights of the copyright owner provided by Section 106 without permission:

- Reproduce the work
- Make derivative copies
- Distribute copies to the public
- Display and perform in public

Copyright Infringement Possibilities...

- CAD design files or software codes copyrighted as **pictorial, graphical, or literary works**.
- Software codes as **literary works** for copyright registration.
- *CAD files could be copyrighted or shared as open source code.*
- Physical 3D objects copied such as toy figures or costume jewelry are copyright protected as **sculptural works**.
- Most copyright litigation tied to 3D printing deals with the anti-circumvention provision of the Digital Millennium Copyright Act (DMCA).
 - DMCA “safe harbor” possibly protects libraries from liability only if self service use applies, such as photocopiers and scanners.
- **Since self service is unlikely, both libraries and 3D printer customers could be liable for potential copyright infringement.**

Copyright Assessment: Avoiding Infringement

Limitations on Copyright Owner Rights

- Unsupervised copying by users: Signage notice posted near printer §108(f)*
- Users uploading infringement material: DMCA “safe harbor” for “online service providers” § 512** does not fit well
- **Other exemptions: fair use § 107*** more likely application to assess for educational purposes.**

*17 U.S. Code § 108 - Limitations on exclusive rights: Reproduction by libraries and archives

**17 U.S. Code § 512 - Limitations on liability relating to material online

***17 U.S. Code § 107 - Limitations on exclusive rights: Fair use

Copyright Assessment: Section 108(f)

Ideally, exemptions for libraries in Section 108(f) could apply. It permits libraries and archives to provide copiers and scanners with unsupervised use without liability of copyright infringement, so long as a copyright notice is displayed. Yet such self-service is not feasible with 3D printers as special training is needed to operate.

However, library personnel managing a mediated service should be trained to recognize potential infringement. **Copyright awareness and training are vital to monitor and prevent potential infringement by the library.**

There is no liability for copyright infringement upon a library or for its employees:

- For the unsupervised use by others
- Of reproduction copying equipment located on its premises
- If a Section 108(f) notice is displayed regarding the making of a copy may be subject to copyright law

UCLA Library: Mediated Copying

<https://www.library.ucla.edu/about/policies/policy-regarding-mediated-copying/>

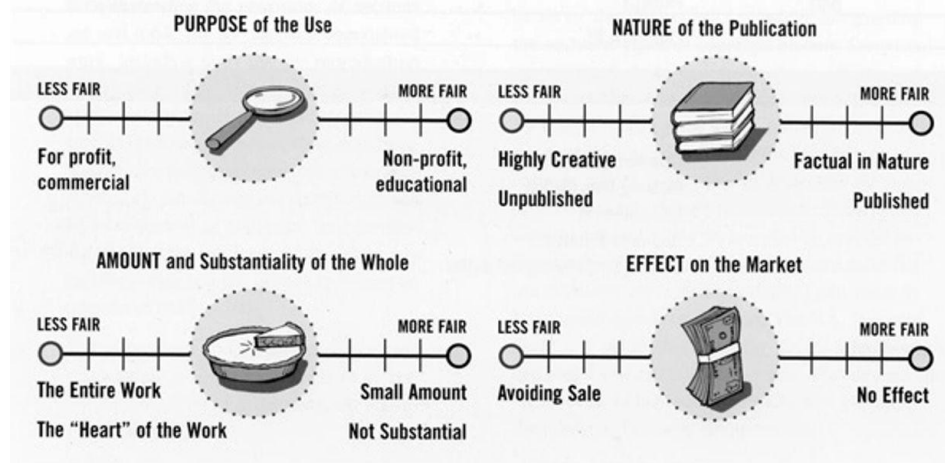
Copyright awareness: Although, Section 108 does not apply for mediated copying by library personnel. **The use of 108 notice may evidence good faith on behalf of the library. Such notice supplements related copyright policy or procedures by informing customers of the potential risk of infringement associated with their request.**

Copyright Assessment: Section 107* Fair Use?

Since 3D printing in a library is usually a mediated service, having a specific copyright policy or procedure in place which assesses an infringement risk should include the right to refuse a customer request. Before refusal, this leaves two viable options for consideration to proceed with customer request:

- Get permission from the copyright holder/author
- Conduct a fair use analysis
 - Fair Use* is determined on a case-by-case basis
 - Analysis based upon four factors: PANE acronym...

*17 U.S. Code § 107 - Limitations on exclusive rights: Fair use



Copyright Assessment: Additional Fair Use Questions

Discussion about library actions as fair use

- In which scenarios would you need to apply fair use for 3D printing services?
- Is fair use possibly tied to educational purposes? Pedagogy of instruction?
- Do you have related copyright policies and procedures in place?
- How does your library or archive address fair use in other situations?

Other considerations?

- Popular trademarks, e.g. cosplay derivatives and fan fiction
- Verifying patented inventions, e.g. replacement parts
- Privacy and freedom of expression issues
- Safety issues too

Infringement in the 3D Printing Community

- Infringement is rampant on 3D printing websites
 - Thingiverse.com
 - Cults3D.com
 - MyMiniFactory.com
 - All3dp.com
- Websites assume content contributors own the copyright
- Anyone can adopt a CC license, even if they do not own the design



THE LICENSE BY DEFAULT ON CULTS

By default, the **Cults - Private Use** license is applied to all designs on the site. As a designer, if you do not specify a license for your design, this license will be automatically applied.

CULTS - PRIVATE USE

You are authorized to:

- ✓ Print and use the 3D prints of the 3D model for private use, in unlimited quantity;
- ✓ Share the images of your 3D prints of the 3D model on communication media such as social networks or websites.

What is not allowed:

- ✗ No commercial use or public sharing of the 3D model;
- ✗ No modification or adaptation of the 3D model for public sharing or sale;
- ✗ No distribution, sale, donation or exchange of the digital files of the 3D model.

An Example of Infringement

- Featured design on Thingiverse.com's homepage: the Sorting Hat aka "Harry Potter Hat"
- Free download
- Not licensed by the copyright holder, Time Warner



Harry Potter Hat

by Design_factory February 21, 2023



License



Harry Potter Hat by Design_factory is licensed under the [Creative Commons - Attribution](#) license.

A Subtler Infringement Example

- A subtle adaptation of the “Death” character from the Darksiders video game
- Paid download from MyMiniFactory.com
- Not licensed by the copyright holder, Vigil Games



Vigil Games character concept art

\$5.00 PRE-SUPPORTED Shadow Stalker (Undead Assassin) - 32mm - DnD



3D

Published a year ago



RN Estudio

@rnestudio

712 objects

10,052 Followers

SUPPORT ME

Add Files To Cart \$5.00

+VAT/Sales Tax (if applicable)

92% goes to the Creator (excluding payment processing fees)



License

MyMiniFactory Digital File Store License

Standard Digital File Store License

Infringement in Featured Stories

- A featured story on the All3dp.com website homepage
- Note the image attribution!
- Baby Yoda not licensed in all 15 featured files by copyright holder, Walt Disney Co.



Source: darthelevator via Thingiverse

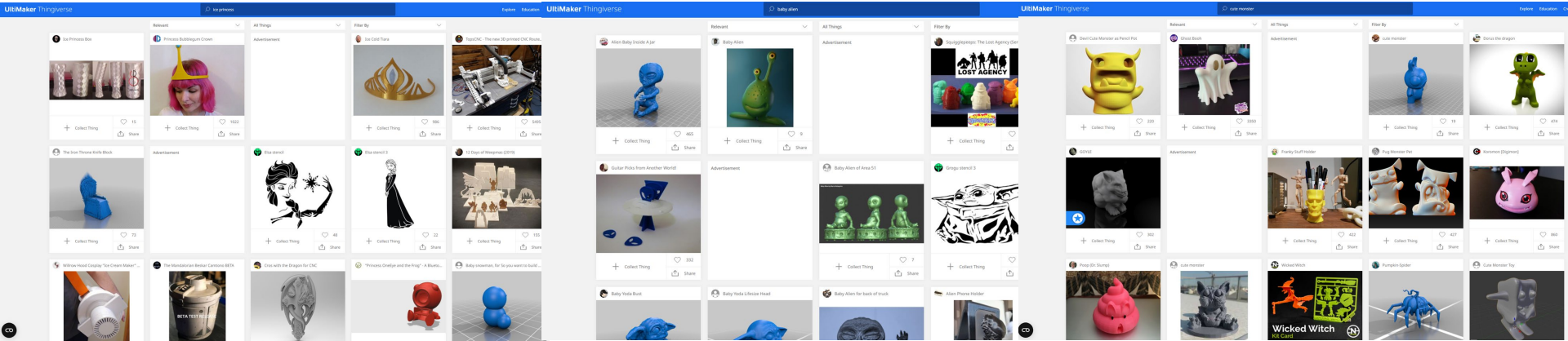
Thingiverse search for openly licensed Pokemon

The screenshot shows the Thingiverse website interface with a search for 'pikachu'. The top navigation bar includes 'UltiMaker Thingiverse', a search bar with 'pikachu' entered, and links for 'Explore', 'Education', and 'Create'. Below the navigation bar, there are three tabs: 'Relevant', 'All Things', and 'Filter By'. The main content area displays a grid of 12 items, each with a 3D model image, a title, and interaction buttons for 'Collect Thing' and 'Share'. The items include:

- Low-Poly Pikachu (24371 likes)
- Pikachu (3653 likes)
- Advertisement
- Ultra swolo Pikachu (9714 likes)
- Pikachu X Kakashi (Pokemon/Naruto) (10906 likes)
- Pikachu!
- Advertisement
- Ornamental Pikachu (2704 likes)
- Lil' Pikachu (762 likes)
- Pikachu fixed (751 likes)
- A Better Pikachu
- Pikachu
- Pikachu Pokemon EDL3D
- Deadpool Pikachu 1 file
- Pikachu Key Chain

All of these are CC-BY, and none of them are posted by Nintendo.

Infringement: Rampant in the 3D Printing Community



“Ice princess” finds Disney’s Elsa from the movie Frozen, CC licensed by user “Longquang”, and her crown CC licensed by user “MerganMcFergan”.

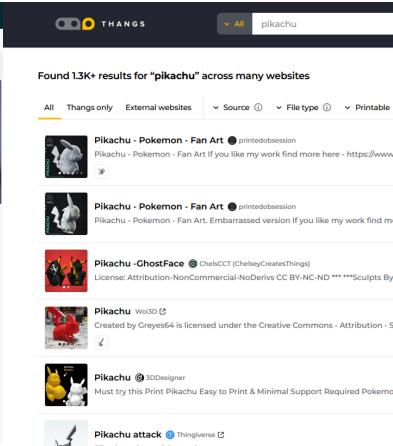
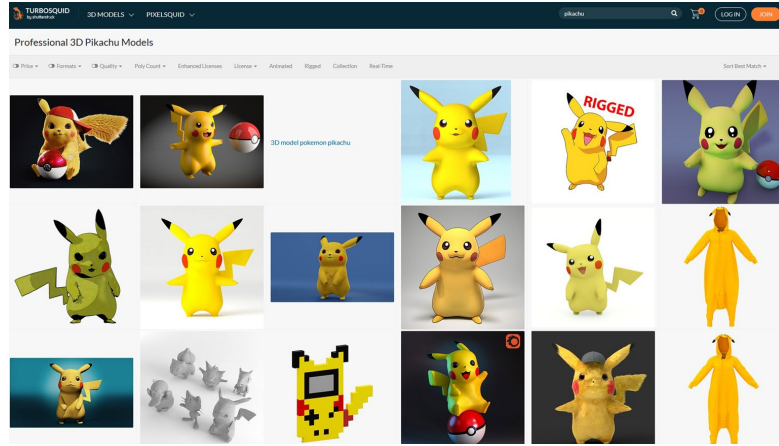
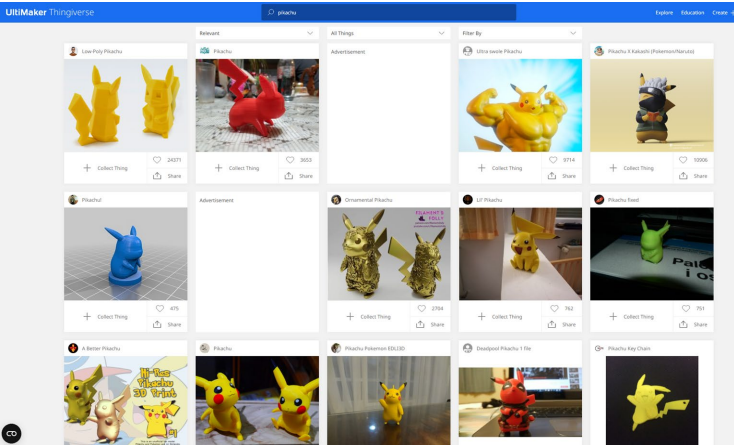
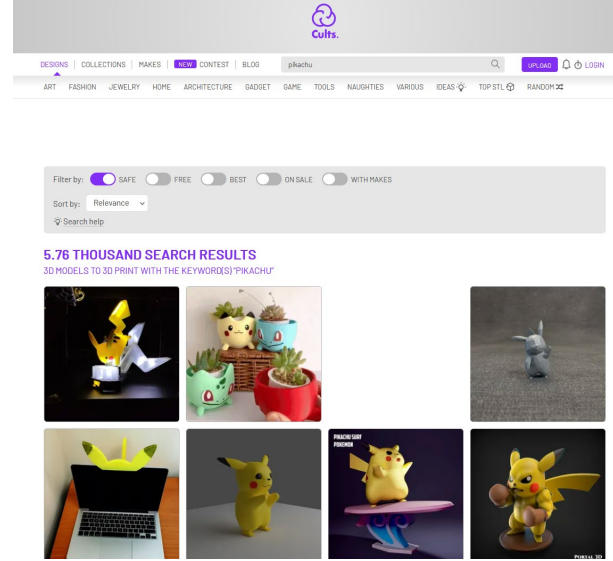
“Baby alien” finds Disney’s Grogu from the show The Mandalorian, CC licensed by user “Longquang”.

“Cute monster” finds Universal Studios’ Frankenstein monster from the movie franchise, CC licensed by user “Martin_S”, and Koromon from Bandai’s Digimon franchise, CC licensed by user “ChaosCoreTech”.

Solution: Vetted repositories

Vetted for these common problems:

- Licensing / Copyright (Open)
- Technical issues



Problems Problems Problems Problems Problems Problems Problems Problems Problems Problems

HIGHLIGHTS

3D OBJECTS collection



CONTACT
US



SEARCH
GET HELP



CREATE OER &
CONTRIBUTE RESOURCES



CONTRIBUTE
RESOURCES



SAVE RESOURCES
TO YOUR FAVORITES



SUGGESTIONS
A RESOURCE

Solution: Vetted Repositories



Making Awesome

Tallahassee's Maker Space

We're a non-profit makerspace run by volunteers. Members get 24/7 access to the tools, machines, and equipment. Visitors can schedule a tour, visit during an open house, or visit with an existing member. We house a wood shop, a soft shop, an e-shop, 3D Printers, laser cutters, and a jewelry shop. We're constantly adding to our shared equipment and welcome suggestions and donations.

We're a diverse group of makers, dreamers, entrepreneurs, students, tinkerers, hobbyists, enthusiasts, and teachers. We believe in building a community that shares knowledge and know-how, fosters life-long learning, and gives back to our communities. We believe in learning by doing, teaching others, and supporting creativity of all kinds through our classes, events, and partnerships.

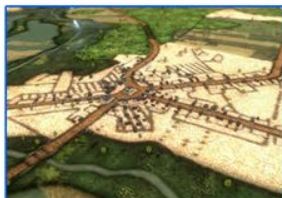
• We also believe in safety so closed-toed shoes are always required. Please observe all safety measures noted in class descriptions and use safety equipment like dust masks, eye protection, and gloves where needed.

Solution: Vetted Repositories

5,955 RESULTS



Filter results RESET



The town of Zheludok in the 1930s - 3D digital reconstruction

Sanko, Pavel; Zobnin, Konstantin; Miedziocha, Robert; ...

Grodzka Gate - NN Theatre



Polished green stone, Olmec Man, L 003

The Hunt Museum

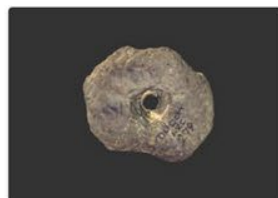
The Hunt Museum



Greek, hand-vase clasping a lekythos, HCM 233

The Hunt Museum

The Hunt Museum



Spindle Whorl

cinég

CINE



Neolithic Ground Axehead, HCA 125

The Hunt Museum

The Hunt Museum



Venus Verticordia

fitzwilliammuseum

The Fitzwilliam Museum



Dionysus

fitzwilliammuseum

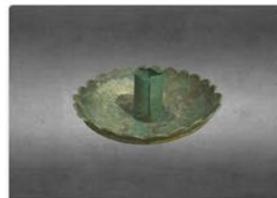
The Fitzwilliam Museum



Sutherland Chair

cinég

CINE



Candlestick Holder

Hunt Museum, as part of the Art of Reading in the Middle Ages project.

The Hunt Museum



Funerary equipment

fitzwilliammuseum

The Fitzwilliam Museum

THEME

Select a theme

TYPE OF MEDIA

3D

CAN I USE THIS?

Select whether you can use this

PROVIDING COUNTRY

Select providing countries

LANGUAGE

Select languages

AGGREGATOR

Select aggregators

INSTITUTION

Select institutions

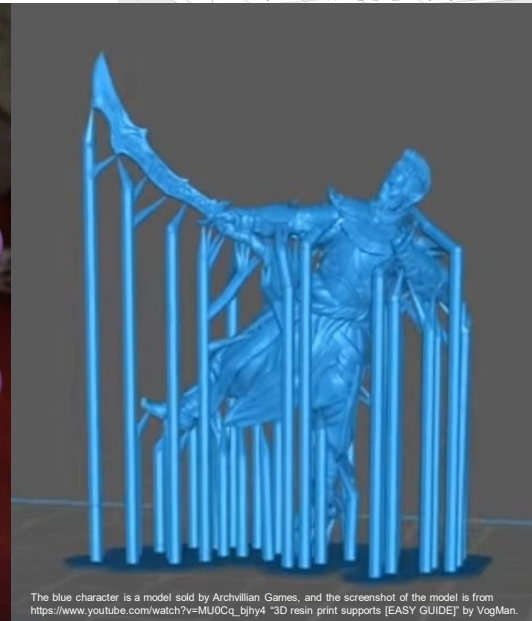
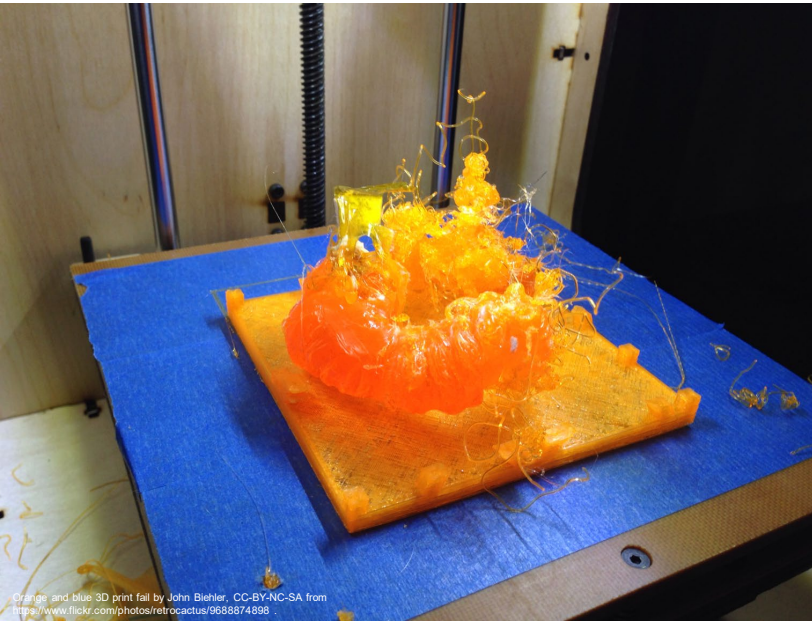
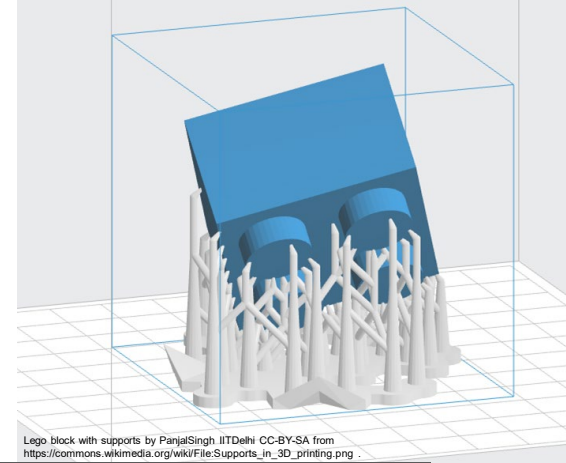
COLOUR

Select colours

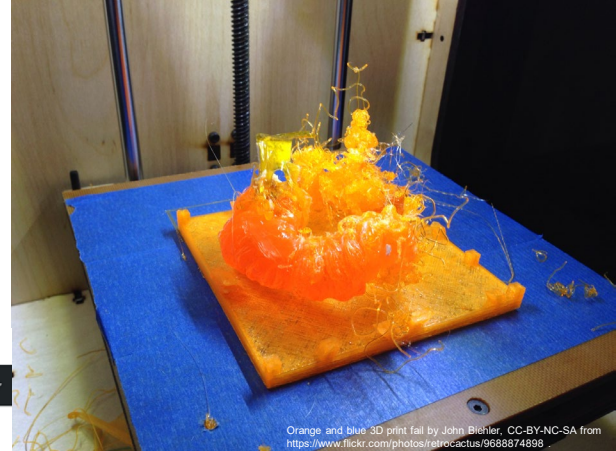
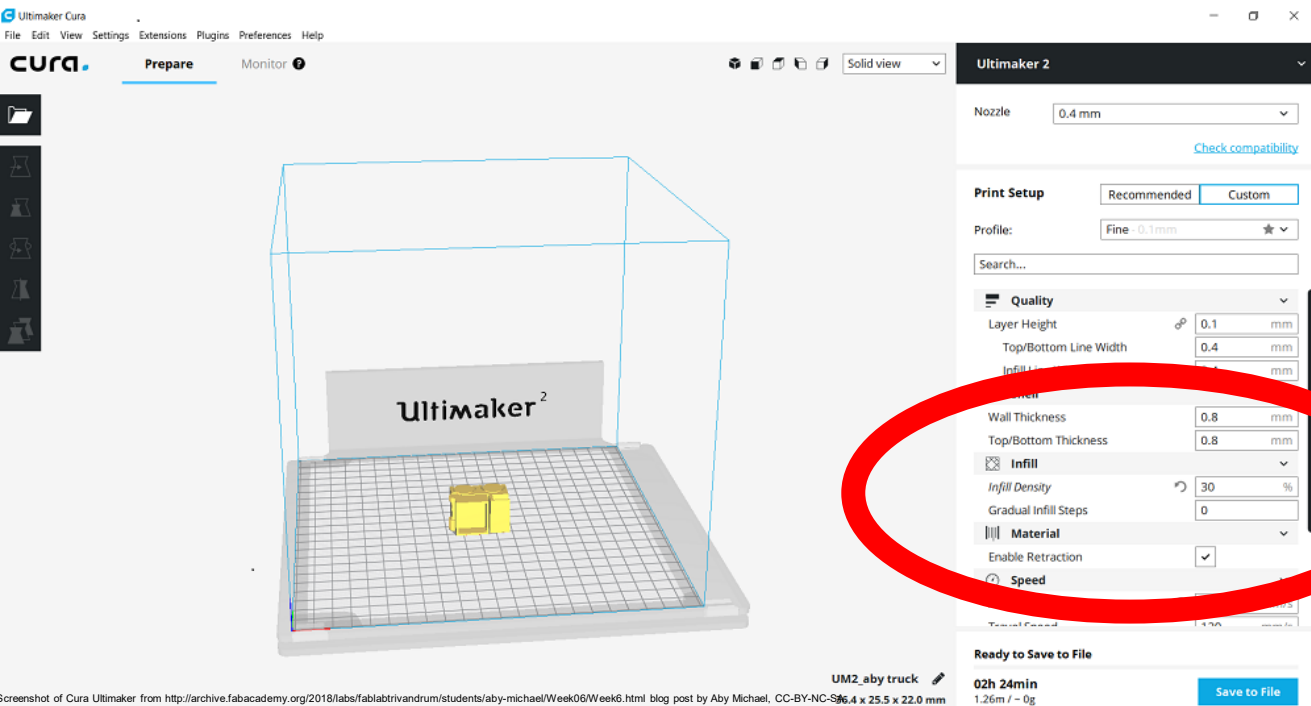
RESET



Solution: Vetted Repositories: Technical vetting



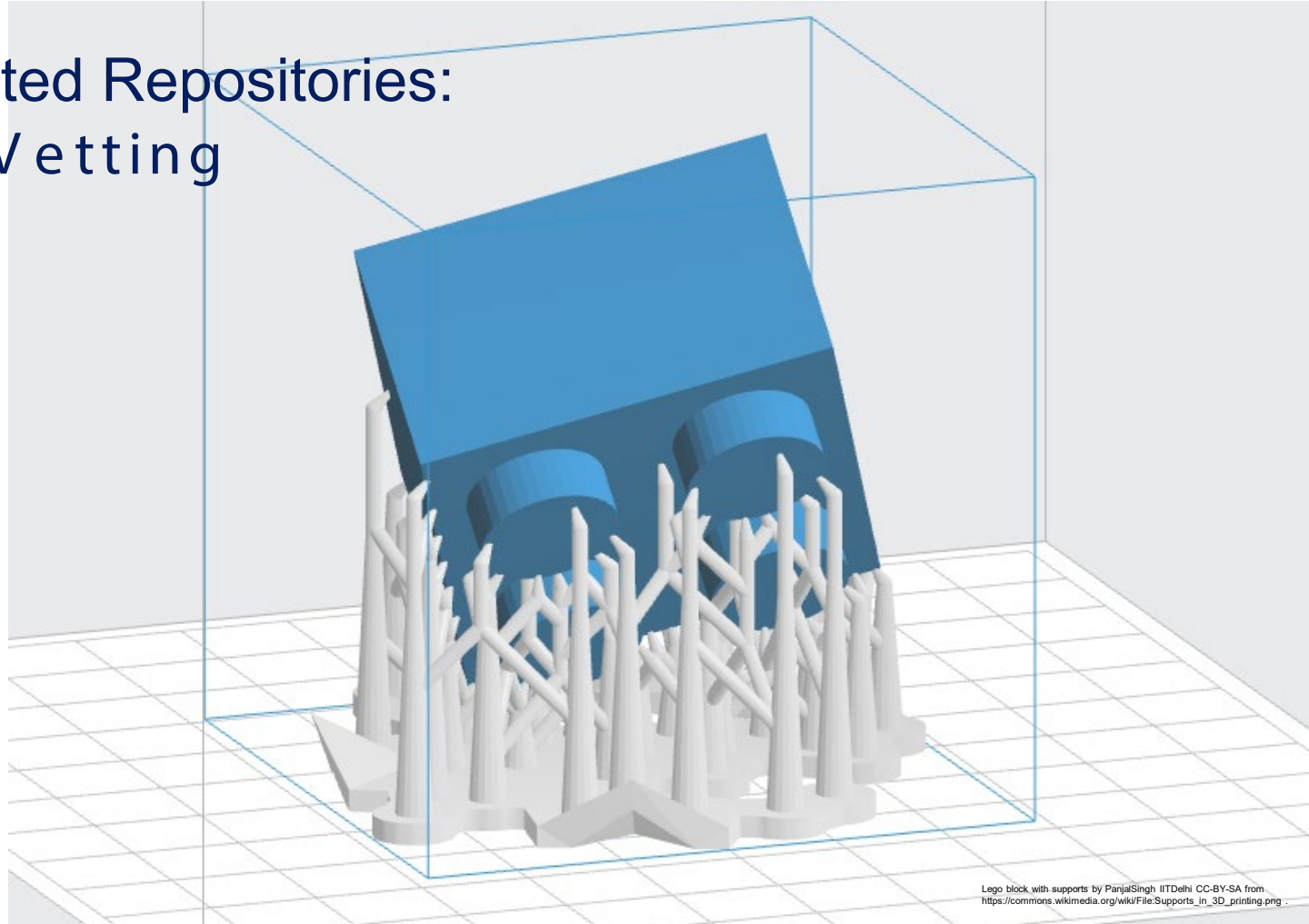
Solution: Vetted Repositories: Technical vetting



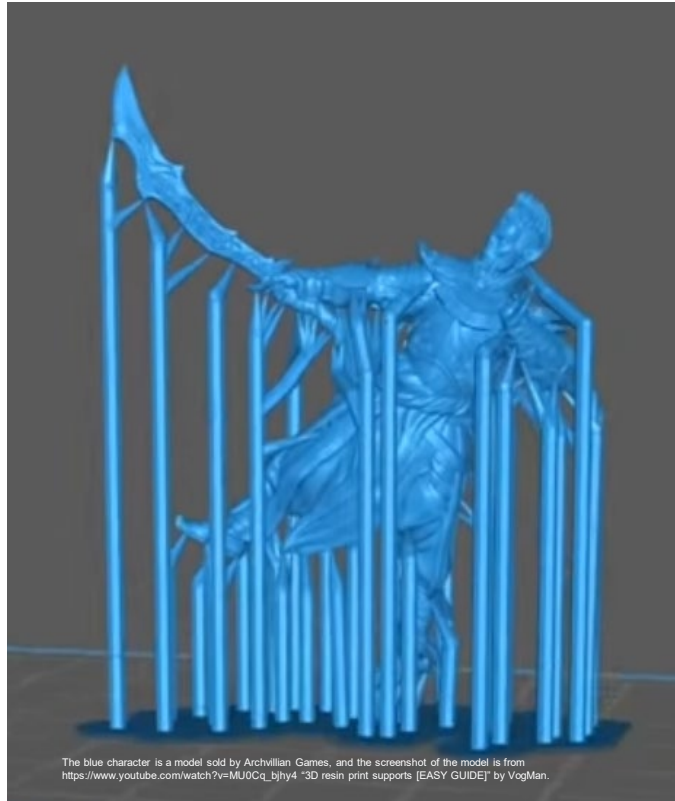
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Solution: Vetted Repositories: Technical Vetting



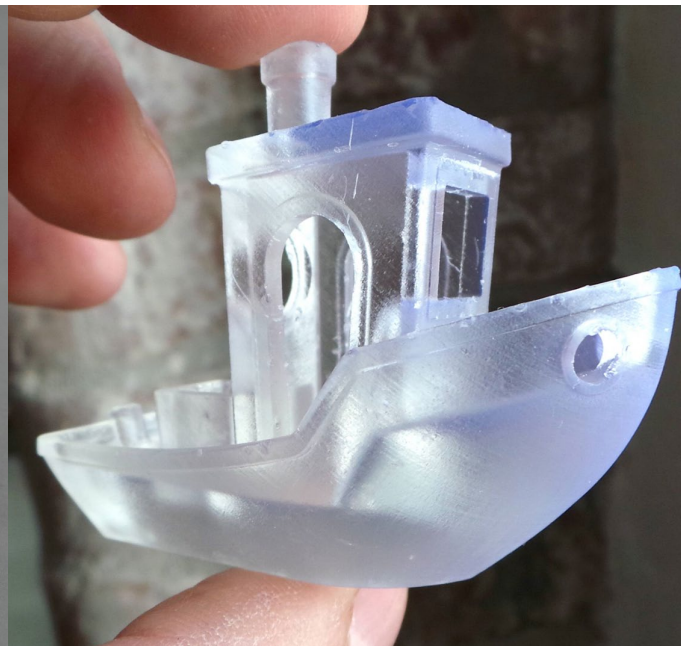
Solution: Vetted Repositories



- Technical Vetting



What a difference technical issues make!



All pics of the boat are by 3DBenchy, licensed CC-BY and available on Flickr (<https://www.flickr.com/photos/3dbenchy/24614369271> and <https://www.flickr.com/photos/3dbenchy/19672643310>).

#3DBenchy - 3DBenchy.com

#3DBenchy - 3DBenchy.com

Solution: Vetted repositories

Vetted for these common problems:

- Licensing / Copyright (Open)
- Technical issues



Sisyphus pic by jalandas0, licensed through Pixabay, CC-BY license, <https://pixabay.com/es/illustrations/lucha>, guest artist, <https://www.pixabay.com/users/1271657/>.

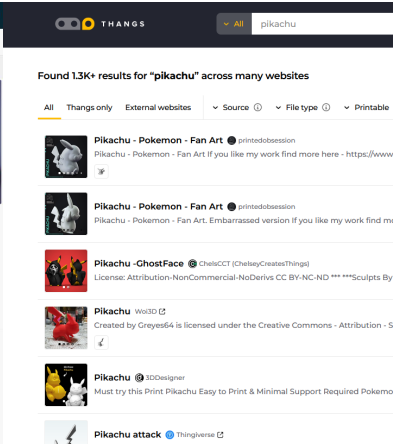
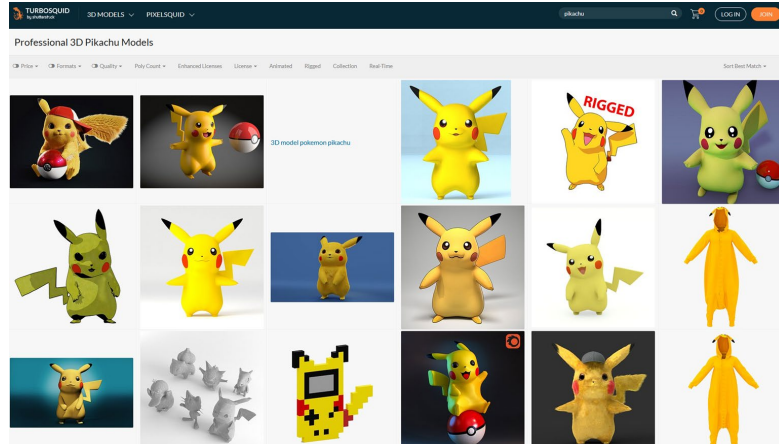
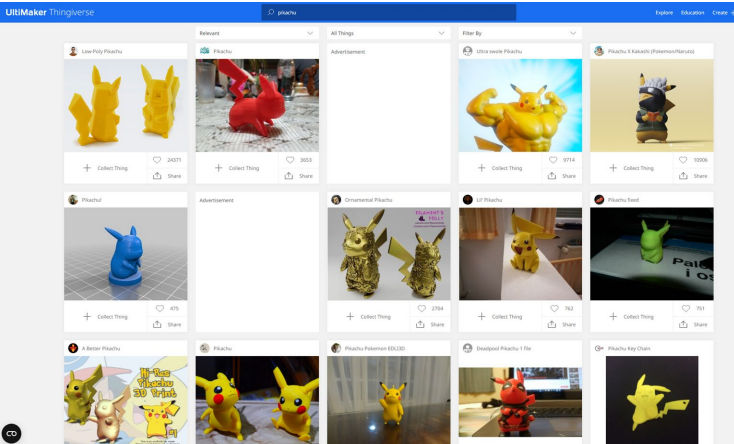
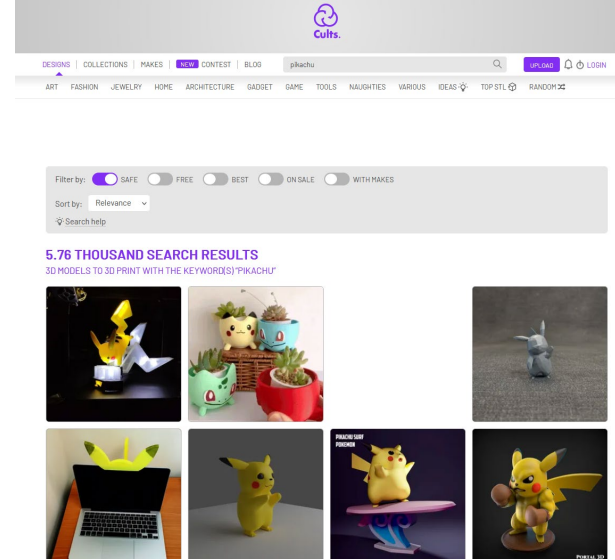


All pics of the boat are by 3DBenchy—licensed CC-BY and available on Flickr (<https://www.flickr.com/photos/3dbenchy/24614369271> and <https://www.flickr.com/photos/3dbenchy/19072643310>).

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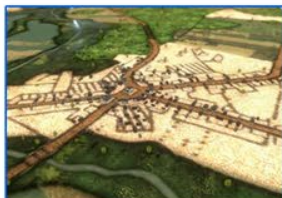
Problems Problems Problems Problems Problems Problems Problems Problems Problems Problems

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5,955 RESULTS



Filter results RESET



The town of Zheludok in the 1930s - 3D digital reconstruction

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Grodzka Gate - NN Theatre



Polished green stone, Olmec Man, L 003

The Hunt Museum

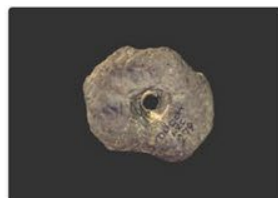
The Hunt Museum



Greek, hand-vase clasping a lekythos, HCM 233

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Spindle Whorl

cinég

CINE



Neolithic Ground Axehead, HCA 125

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Venus Verticordia

fitzwilliammuseum

The Fitzwilliam Museum



Dionysus

fitzwilliammuseum

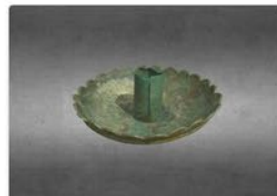
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Sutherland Chair

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Funerary equipment

fitzwilliammuseum

The Fitzwilliam Museum

THEME

Select a theme

TYPE OF MEDIA

3D

CAN I USE THIS?

Select whether you can use this

PROVIDING COUNTRY

Select providing countries

LANGUAGE

Select languages

AGGREGATOR

Select aggregators

INSTITUTION

Select institutions

COLOUR

Select colours

RESET



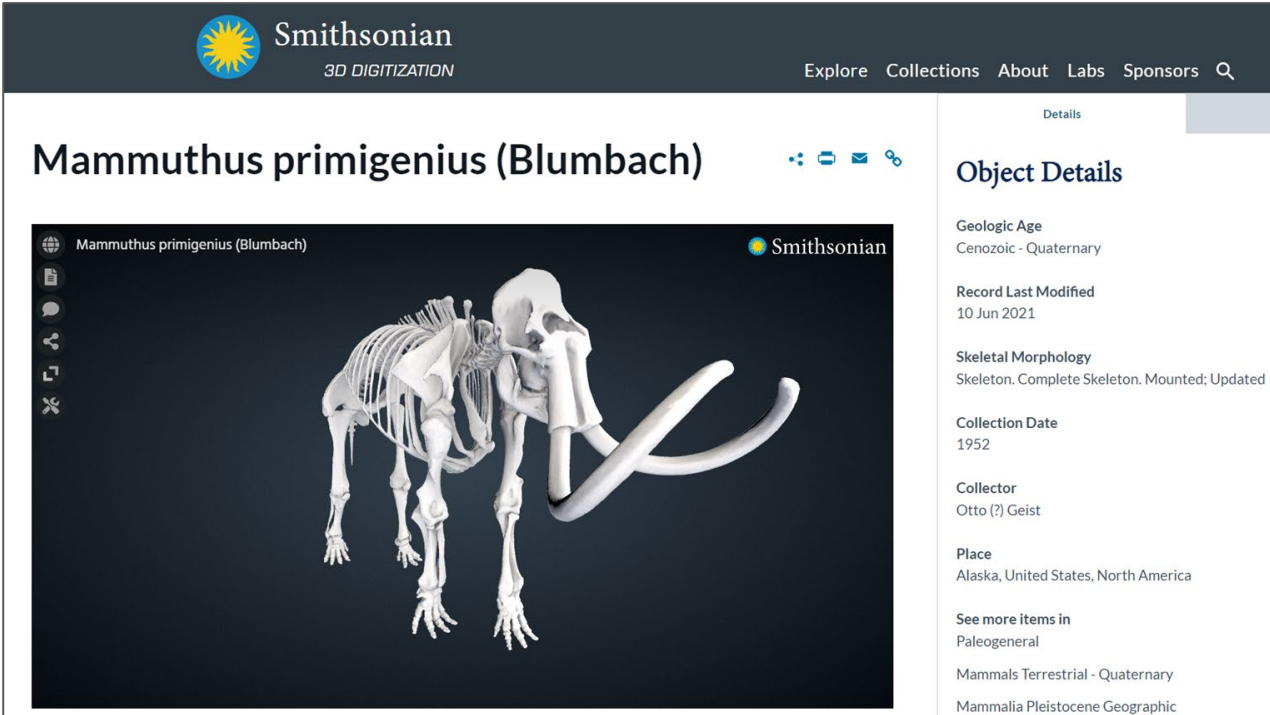
Solution: Existing Vetted Repositories

What's available online now:

- Smithsonian 3D
<https://3d.si.edu/>
- NASA 3D Resources
<https://nasa3d.arc.nasa.gov/>
- National Institute of Health 3D
<https://3dprint.nih.gov/>
- MyMiniFactory Scan the World
<https://www.myminifactory.com/scantheworld/>
- The Metropolitan Museum of Art @ Thingiverse
<https://www.thingiverse.com/met/designs>



A 3D model likely to fail due to lack of support...



The screenshot displays the Smithsonian 3D Digitization website interface. At the top, the Smithsonian logo and "3D DIGITIZATION" text are on the left, and navigation links for "Explore", "Collections", "About", "Labs", "Sponsors", and a search icon are on the right. The main content area features the title "Mammuthus primigenius (Blumbach)" with interactive icons for zoom, pan, and share. Below the title is a 3D model of a mammoth skeleton, rendered in white against a dark background. The model is shown in a side profile, highlighting its large, curved tusks and complete skeletal structure. To the right of the model is a "Details" sidebar containing the following information:









- Geologic Age:** Cenozoic - Quaternary
- Record Last Modified:** 10 Jun 2021
- Skeletal Morphology:** Skeleton. Complete Skeleton. Mounted: Updated
- Collection Date:** 1952
- Collector:** Otto (?) Geist
- Place:** Alaska, United States, North America
- See more items in:** Paleogeneral, Mammals Terrestrial - Quaternary, Mammalia Pleistocene Geographic

Image source: <https://3d.si.edu/object/3d/mammuthus-primigenius-blumbach:341c96cd-f967-4540-8ed1-d3fc56d31f12>

Solution: Build Your Own Vetted Repository

- Decide on a platform, e.g. WordPress, LibGuides, Digital Commons
- Identify personnel who can vet models for OER
- Locate or train personnel on technical aspects of 3D printing
- Review existing OER repositories, e.g. Florida Orange Grove: <https://bit.ly/3JxcbAc>



-  [Dashboard](#)
-  [Search](#)
-  [Browse Open Collections](#)
-  [Browse Higher Education Resources...](#)
-  [Browse K-12 Resources](#)
-  [Browse Institution Collections](#)
-  [Home](#)
-  [Suggestion Box](#)

OG3D

The Orange Grove 3d is a collection of printable 3d object models. The models are either public domain, or licensed under an open schema including Creative Commons, GPL, or 3DPL. Models are tagged, searchable by subject category, and in some cases, may include a Florida Common Course number for a course in which the model has been used.

The collection contains models (ex: a printable model of a human brain), tools (ex: printable parts to build a spectroscope), historical models (ex: a life mask of Abraham Lincoln), or even the parts to build a 3d printer.

In general, the object models in this collection are in .stl format, and include a photograph of the object printed from the model.

Contributions of models to the collection are encouraged. Models should be printable, and a photograph of the printed object should be included with the .stl file. The contributor should identify (if known) the creator of the model, what sort of license the model is released under, and the academic discipline category(ies) for which the printed object is useful.

For more information about the OG3d collection, contact the FLVC Help Desk.

Results

Showing 1 to 10 of 29 results

▼ Sort

▼ Filter

▼ Share

[Eros 433 - An Astroid](#)

This is a printable model of 433 Eros, an astroid in near-earth orbit.

Status: Live | Last updated: [June 28, 2016 2:10 PM](#)

[0 comments](#)

[Wrench printed in space](#)

This isn't the first 3D-printed object made in space, but it is the first created to meet the needs of an astronaut. When International Space Station Commander Barry Wilmore needed a wrench, NASA knew just what to do. They "e-mailed" him one. This is the first time an object has been designed on Earth and then transmitted to space for manufacture.

Status: Live | Last updated: [June 28, 2016 12:00 PM](#)

[0 comments](#)

Advocacy for Vetted 3D Model Repositories

- We are advocating for libraries to establish their own vetted repository or form/join a consortium that offers access to one
- 3D model repositories containing vetted files fulfill a clear need for libraries providing 3D printing services
- Vetted repositories relieve the burden of copyright liability when clear protocols for inclusion are defined and followed

Questions?

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