3D Models & Rights Management

A Report on Copyright and Other Rights Assessments
for 3D Models in Europeana

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Author(s)	*Dr Andrea Wallace and Dr Francesca Farmer, GLAM-E Lab at the University of Exeter Law School*
Contributor(s)	*Michael Weinberg, GLAM-E Lab at the Engelberg Center on Innovation Law & Policy, NYU Law School*
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Executive Summary

This study was commissioned by Europeana to support the provision of 3D content to Europeana.eu in line with the Recommendation on a common European data space for cultural heritage.[1] Among other goals, the Recommendation aims to enable innovative forms of creation, while opening up new ways of digitally engaging with and enjoying cultural content, and to support the creative industries.[2] These goals complement the Directive (EU) 2019/790 on Copyright and Related Rights in the Digital Single Market to clarify the status of public domain works of visual art and improve legal certainty around the reuse of non-original digital surrogates and other reproduction media.

The aim of this study is to map the legal frameworks and rights management practices that apply to 3D models to establish whether the rights asserted in them are valid. The overall objective is to improve the application of accurate rights statements to the 3D models contributed to Europeana.eu and the common European data space for cultural heritage (hereafter the data space) so they may be accessed, shared and reused. The findings are as follows:

- At the time of this study, Europeana.eu publishes 4,646 3D models of cultural heritage objects and sites. While the underlying works are overwhelmingly in the public domain, **93% (or 4,366) of their 3D digitisation are subject to new copyright claims**. Only 6.7% (or 311) are marked as public domain.
- **Approximately 75% of these copyright assertions are likely not warranted**. This is because it is unlikely that a new copyright arises in 3D models that aim to accurately reproduce a cultural heritage object or site.
- For a new copyright to arise: (1) there must be scope for creative choices to be made during the model's production; (2) creative choices must in fact be taken; and (3) those creative choices must result in the model being the author's own intellectual creation. The **3D model must be imprinted with the technician's personal touch such that it is a new original expression**, rather than a faithful reproduction of the source object.
- Scope for creative decisions can arise during **pre-production** (*e.g.*, when selecting items for digitisation, processing software, and equipment), **production** (*e.g.*, with the camera or scanner set-up, positioning the objects, lighting, and capture settings) and **post-production** stages (*e.g.*, selecting the images for processing, modifying mesh, and applying editing settings or processes). When these processes are predetermined by a specific goal or set by narrow technical or functional rules, **a 3D model will be characterised by its technical function** and therefore be non-original.
- **Even when they require significant time, expertise, and investment, non-original 3D models do not receive copyright protection.** This exposes a certain irony for 3D heritage projects: the more someone invests in making a

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[1] Commission Recommendation (EU) 2021/1970 of 10 November 2021 on a common European data space for cultural heritage (12/11/2023) OJ L 401/5 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32021H1970.
[2] Recommendation 2021/1970, Recitals 8, 14.

model accurate, the less likely it is to become the author's own intellectual creation. By contrast, the more "original" the model, the less useful it becomes for study and other purposes that require reliable data and accuracy.

- Against this backdrop, this study found that **data providers are either misinterpreting copyright law or failing to disclose what makes a model original** in the metadata, paradata, or other descriptions, which raises reliability and verifiability issues.

- Other rights or conditions can affect a 3D model and might include related rights, property and cultural heritage laws, cultural rights and ethical considerations, and contractual or database rights. **If arising, these rights also are not accurately reflected in the rights statements** applied to 3D models on Europeana.eu.

- Europeana **does not currently have protocols to support accurate copyright assessments**, such as using the Europeana Data Model (EDM) fields to indicate a model's scientific accuracy or creative interpretations or by setting standards in the Europeana Licensing Framework (ELF) on metadata or paradata descriptions to disclose any original elements therein.

- **Europeana can help to build trust among data providers** by supporting more accurate rights assessments while encouraging users to credit and provide attribution to projects. The EDM and ELF should be operationalised to enable the disclosure of information on what elements, if any, are protected in a model to also enable their study and use for scientific purposes, as well as attribution.

- The recommendations made by this report to support the application of more accurate rights statements to 3D models contributed to Europeana.eu and the data space can be extended to all data space participants.

1. Introduction

In line with the European Commission Recommendation (2021) on a common European data space for cultural heritage, the Europeana Initiative is currently upgrading its infrastructure to support the provision of 3D content in Europeana.eu.[3] This work impacts the different Europeana frameworks from the Europeana Licensing Framework (ELF) to the Europeana Data Model (EDM).

At the time of this study, Europeana publishes 4,696 3D models of cultural heritage objects and sites, accounting for 0.0008% of assets on the platform.[4] Contributed by 53 data providers, these models include geological findings, tools, pottery, photographs, sculptures, monuments, tombstones, architectural structures, and archaeological sites. The underlying works are overwhelmingly in the public domain, but with respect to their 3D digitisations:

- 93% (or 4,366) are subject to new copyright claims
- 6.7% (or 311) are marked as public domain
- 0.3% (or 19%) are published under terms that disclaim copyright and prohibit commercial use

This report reviews the legal frameworks and rights management practices that apply to 3D models to establish whether the rights asserted are valid. It covers:

- whether copyright, related rights, or other rights subsist in 3D models
- data on rights assertions in the 3D models contributed to Europeana
- analysis to support good practice and standardisation across the cultural sector

The report is not intended as legal advice but to inform more accurate rights assessments in 3D models contributed to Europeana so they may be accessed, shared and reused.[5]

1.1. Statement of the problem

Digitising an object will create new property in the form of a digital surrogate—but does it also create new intellectual property? Under most national copyright laws, the answer

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[3] Commission Recommendation (EU) 2021/1970 of 10 November 2021 on a common European data space for cultural heritage (12/11/2023) OJ L 401/5 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32021H1970.

[4] At the time of this study, Europeana returned 57,699,104 total assets, of which 4,696 were 3D models.

[5] This report draws from and contributes to prior work done by Thomas Margoni and Judith Blijden on rights subsistence and statements accuracy as applied to 3D models. *See* Thomas Margoni, 'The Digitisation of Cultural Heritage: Originality, Derivative Works and (Non) Original Photographs' (2014) Institute for Information Law (IViR) ID 2573104; Judith Blijden, 'Research Paper: The Accuracy of Rights Statements on Europeana.Eu' (*Kennisland*, 5 February 2018) <https://www.kl.nl/en/publications/research-paper-the-accuracy-of-rights-statements-on-europeana-eu/> accessed 19 April 2020.

is "No," regardless of the underlying work's copyright status. This is because digitisation will result in a faithful reproduction of that object rather than a new "original" expression as required by copyright law.[6] To receive protection, EU (and UK) copyright laws require that work to be original in the sense that it is the "author's own intellectual creation."[7] This means any originality should be assessed on a case-by-case basis, with non-original materials clearly marked as public domain. Within the context of cultural heritage, however, the current practice seems to be to claim new copyrights in digitised public domain works that are non-original, particularly when the digitisation is a 3D model.

An examination of Europeana.eu reveals a clear distinction in how copyright is assessed across different types of digital surrogates.[8] While other categories are outside this report's scope, comparing the rights statements of images (*i.e.*, 2D digitisations) to 3D models reveals a significant diversion in how copyright is interpreted. All underlying works appear to be in the public domain, yet only 6.3% of their 3D digitisations are released under a public domain status. With respect to 2D digitisations, some of which even depict in-copyright works, 30% are released as public domain.[9]

This division suggests that many organisations believe copyright arises during 3D digitisation due to factors not present during 2D digitisation. This belief is not unreasonable. Methods of 3D reproduction can involve higher levels of expertise, complex interventions and expensive technologies. However, copyright law does not reward technical or non-original contributions no matter how much time and effort is expended during 3D reproduction.

Indeed, most 3D models of cultural objects and sites aim to accurately depict the work to facilitate its appreciation and study. Choices made during reproduction are largely dictated by the function of accurate representation, which makes a new copyright

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[6] To illustrate, consider a digital photograph of a painting by a living artist, like David Hockney. The painting is protected by copyright. The digital photograph is not protected by an independent copyright. Digitisation without the artist's permission will infringe his copyright. If digitised with permission, the digital surrogate will be subject to the same copyright status and ownership of its painting: © David Hockney. When the painting's copyright expires, so does the copyright protecting the digital surrogate. Compare this scenario to a painting by an artist who died more than a century ago. The painting is no longer protected by copyright, so permission is not needed for digitisation. It does not follow that, in this case, a new copyright arises in the digital surrogate. New property has been created, but not new intellectual property. Both the painting and its copy are in the public domain.
[7] Directive 2006/116/EC of the European Parliament and of the Council of 12 December on the term of protection of copyright and certain related rights OJ L 372/12, Art. 6; Case C-604/10 Football DataCo Ltd, Football Association Premier League Ltd, Football League Ltd, Scottish Premier League Ltd, Scottish Football League, PA Sport UK Ltd v Yahoo! UK Ltd, Stan James (Abingdon) Ltd, Stan James plc, Enetpulse ApS [2012] ECLI:EU:C:2012:115; THJ Systems Ltd & Anor v Sheridan & Anor [2023] EWHC Civ 1354.
[8] Europeana aggregates digital images, text, sound, video and 3D models.
[9] Based on data collected in March 2024, Europeana aggregates 31,508,492 images. Of these, 9,576,534 are published as public domain, with 7,168,699 CC0 and 2,407,835 Public Domain Mark.

protection unlikely. This exposes a certain irony: the more someone invests in making a model accurate, the less likely it is to be the author's own intellectual creation.

By contrast, the more "original" the model, in the sense that the creator is creatively adding or embellishing elements that depart from the source object, the less useful it becomes for study, research, and other purposes that require reliable data and accuracy. Indeed, other 3D models, like born-digital reconstructions or entirely new creations are likely protected by copyright if sufficient creativity is involved to make the model the author's own intellectual creation. That process may require expressive interpretations, such as the reconstruction of a town surrounding a castle based on artistic renderings and historical information known about the structures. Copyright will protect these models so long as creative choices made during their production imprint the technician's personality on the 3D model, making it a new original expression. The issue is that organisations are either misinterpreting copyright law or failing to disclose what makes a model original in the metadata, paradata or other descriptions, which raises data reliability and verifiability issues.

1.2.   Research approach and scope

Against this backdrop, the GLAM-E Lab examined the 3D models contributed to Europeana.eu to identify how copyright was being interpreted by organisations (*i.e.*, data providers) and whether that interpretation complied with copyright laws among the jurisdictions represented in Europeana.

The main research questions were: First, what current laws govern whether rights arise in 3D models, what are those rights, and who owns them? Second, how do data providers interpret and assert rights in 3D models on Europeana? And, third, are those rights valid?

To address these questions:

- Section 2 outlines the law in this area
- Section 3 analyses the data on 3D models on Europeana, including the accuracy of rights statements used
- Section 4 makes recommendations to improve copyright literacy across the cultural sector

Our research started from **the position that faithful 3D models of existing objects and sites do not attract new copyright protections.** This enabled us to study which aspects of the reproduction process could support a conclusion that a given 3D model was sufficiently original to obtain copyright protection. There were two caveats to this approach.

First, organisations do not typically disclose information beyond basic metadata or paradata, and Europeana is currently not supporting the provision of paradata through its metadata provision model, EDM. For 3D models that are faithful representations of their source object, this did not raise issues. However, with more complex models like reconstructions, this meant it was not clear whether aspects of the model faithfully

reproduced an existing source object or had been contributed as a part of the reconstruction. Wherever possible, we undertook additional desk-based research to uncover this information.

Second, similar to members of the public, we did not have access to the source object to determine whether the 3D model was sufficiently creative in that the work was the author's own intellectual creation. Some discussions with 3D technicians took place to understand what, if anything, was creative about the reproduction process and 3D model such that a new copyright was warranted.

For these reasons, we focused on mapping the points at which copyright might arise at various stages of 3D reproduction in order to make general conclusions on accuracy. This resulted in the development of two aspects: the Decision Matrices in Section 2 and Scenarios in Section 3.

Developing the decision matrices enabled us to distinguish technical decisions from creative decisions and identify what type of creative activity would result in a new original work rather than a faithful reproduction. We used these tables to review the Europeana data discussed in Section 3. We then developed a set of Scenarios that draw on real examples to identify what rights, if any, should apply to 3D models. This enabled us to distinguish copyright considerations from others, such as data, contracts, cultural heritage laws or cultural rights, and to assess a statement's accuracy.

We do not claim that all of our conclusions are accurate. However, they are guided by EU laws and policies that aim to ensure public domain materials remain in the public domain after digitisation, as well as information about the 3D models published by data providers themselves. What became evident is that organisations need more support in assessing which 3D models are non-original and which aspects of the reproduction process are not only sufficiently creative but also result in the 3D digitisation being the author's own intellectual creation.

1.3. Methodology

The research for this report took place from November 2023 to April 2024. It included reviews of literature, national and EU legal measures, an analysis of 3D models and rights statements on Europeana, and interviews with digitisation staff and data providers.

Reviews of laws and literature

We first reviewed the legal measures, scholarly literature, and industry practice on rights arising (or not) during cultural heritage digitisation. Parts of this work built on ongoing research undertaken by the GLAM-E Lab and a University of Exeter law student in Spring 2023.[10]

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[10] Thank you to Mabel Warrick for her research on 3D reproduction and her contributions to the first version of the Decision Matrices.

Quantitative and qualitative research

We then audited and reviewed data on Europeana.eu for all 3D models and rights statements up to 9 January 2024. Of the RightsStatements.org labels,[11] these included:

- In Copyright
- In Copyright - Educational Use Permitted
- No Copyright - Non-Commercial Use Only

Of the Creative Commons licences and tools,[12] these included:

- CC BY-NC-ND (Attribution, Non-Commercial, NoDerivatives)
- CC BY-NC-SA (Attribution, Non-Commercial, ShareAlike)
- CC BY-NC (Attribution, Non-Commercial)
- CC BY-ND (Attribution, NoDerivatives)
- CC BY-SA (Attribution, ShareAlike)
- CC BY (Attribution)
- CC0 (Universal Public Domain Dedication)
- PDM (Universal Public Domain Mark)

We then collected the following information for each data provider:

- Country (*i.e.*, jurisdiction)
- Type of institution or organisation
- Total 3D models contributed
- Rights statements assigned to the 3D models

With respect to data provider practices:

- Where a data provider used one rights statement for all 3D models, we reviewed a small and diverse sample to assess their general accuracy.
- Where a data provider used a range of licences and rights statements, we undertook a more in-depth review to understand the use of multiple licences and rights statements and to assess their general accuracy.

We did not perform an exhaustive review of all 3D models contributed by the data provider. Our aim was to understand if there were sufficient grounds to justify the rights statement applied to all, some, or none of the 3D models subject to that statement.

We reviewed individual models to determine if the digital surrogates accurately represented the source object or included additional creative embellishments to assess the accuracy of the rights statement. This included examining the available data to understand how the model was made. In other words, we attempted to reverse engineer the copyright assessment using information such as:

- the model's description and metadata on Europeana.eu

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[11] *See* https://rightsstatements.org/en/
[12] *See* https://creativecommons.org/share-your-work/cclicenses/

- the model's description and metadata on another platform linked from Europeana.eu (e.g., Sketchfab)
- information available on the organisation's website, including the source object's page, the model's page or other pages
- information available on the project's website, if produced as part of a collaboration or funded project

Accordingly, our assessments were based on the descriptions and metadata published by data providers themselves, whether via Europeana, another platform, or an associated website. Where organisations did not disclose creative contributions or changes to the 3D model, we assumed that reproduction had proceeded under goals to faithfully model the source object and therefore that it was non-original.

In some cases, we could not make conclusions on accuracy. Reasons for this related to minimal descriptions or metadata, our inability to preview files without first downloading and installing software, and so on.[13]

We divided the accuracy assessment into four categories: accurate, inaccurate, questionable, and unknown. Because the presence of a copyright-based rights statement can correlate to the complexity of the object, we developed scenarios to illustrate where clusters of model types enabled us to draw conclusions on accuracy. For example, faithful reproductions of public domain objects marked with CC0 or PDM were assigned "accurate" while others marked with a statement that claimed copyright in the digital surrogate were assigned "inaccurate." A rights statement was questionable when there was reasonable scope for rights to arise based on information made available to support that conclusion. A rights statement was unknown when limitations prevented our ability to assess the model and therefore its originality, such as needing to download and install software to examine the model.

Lastly, we held selective discussions with technicians to learn what, if anything, was creative about the 3D modelling process, both in general and with respect to specific models.

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[13] Some rights statements on 3D models have been updated since 9 January. *See* https://docs.google.com/spreadsheets/d/1TBQcMEqcmU1K5Se7RUj_p3VvuRDtt0_UAkNzQtWRX5M/edit#gid=0.

2. Legal Analysis on Rights in 3D Models

At first glance, the legal question appears complicated. Whether new rights arise during reproduction can depend on intersecting frameworks of EU and national laws related to property, intellectual property, contracts, databases, data protection, or cultural heritage, as well as more practical factors.

For example, the complexity of the source object or limitations in reproduction technologies may require human interventions to correct or complete the renderings, introducing uncertainty to the copyright question. With larger projects involving multiple technicians, stages of reproduction, processing, or composite data, protection may arise in certain data or layers contained in the 3D model, resulting in a copyright asserted in the model as a whole. Contractual agreements with an object's owner or project partner which include terms on data or IP ownership might prohibit its public domain release. Countries like Italy and Greece also restrict use of the 3D model's underlying work despite its public domain status.[14] For organisations, this can mean juggling legal grey areas and completing interests related to public missions, open access, commercialisation, and the legal obligations of public bodies.

The reality is that these factors are not prohibitive and often can be overcome, notably by understanding the limits of copyright protection and having conversations early on about the application of the CC0 1.0 Universal Public Domain Dedication to a model, where appropriate. Even in jurisdictions where copyright or moral rights are unwaivable, owners are not required to enforce them.

This section provides a legal analysis of these rights. Section 2.1 focuses on copyright in 3D models. Section 2.2 provides a scoping summary of other rights that can arise in 3D models. The aim is not to unnecessarily complicate rights assessments in 3D models but to aid their identification and subsequent modification to ensure they are not unnecessarily restricted by copyright-based statements or other restrictive terms.

Given the demographics of Europeana data providers, this section primarily covers the laws of the EU and its member states, addressing other jurisdictions where relevant.[15]

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[14] *See, e.g.,* https://communia-association.org/2022/10/25/the-uffizi-vs-jean-paul-gaultier/ and https://communia-association.org/2023/03/01/the-vitruvian-man-a-puzzling-case-for-the-public-domain/.

[15] For comparison, US courts have held photographic reproductions, scans and models of both 2D and 3D works to be non-original. *See* Bridgeman Art Library, Ltd v Corel Corporation, 25 F. Supp. 2d 421 (S.D.N.Y. 1998); Bridgeman Art Library, Ltd v Corep Corporation, 36 F. Supp. 2d 191 (S.D.N.Y. 1998); Meshworks, Inc v Toyota Motor Sales USA, Inc, 528 F.3d 1258 (10th Cir. 2008) ("[T]he putative creator who merely shifts the medium in which another's creation is expressed has not necessarily added anything beyond the expression contained in the original."); President & Fellows of Harvard College v Ellmore, No. 15-CV-00472-RB-KK, 2016 WL 7494272 (D.N.M. May 19, 2016); President & Fellows of Harvard College v Ellmore, 222 F. Supp. 3d 1050 (D.N.M. 2016); US Copyright Office, Compendium of US Copyright Practices § 909.3 (3d ed. 2014) (instructing the Copyright Office not to register works "if it is clear that the photographer merely used the camera to copy the source work without adding any creative expression to the photo"); Policy Decision on Copyrightability of Digitized Typefaces, 53 Fed. Reg. 38110, 38113 (Sept. 29, 1988) (stating that digitization fails to create authorship and rather "digitized version is a copy of the

Our analysis is not intended to be exhaustive but to highlight the most relevant aspects emerging from the review of the 3D models in Europeana.

2.1. Does copyright arise in 3D models?

As mentioned, the key question is whether sufficient creative choices are made that result in the 3D model being the author's own intellectual creation, rather than a reproduction of an existing work. While copyright subsists only in original expressions, the 2006 Copyright Term Directive permits member states to recognise related rights in non-original photographs. More recently, however, Article 14 of the 790/2019 Copyright and Related Rights in the Digital Single Market Directive (CDSM Directive) has prohibited the recognition of related rights in non-original materials resulting from the reproduction of public domain artworks. We discuss the interplay of these and other legal measures below.[16]

2.1.1. Copyright and "originality"

What is "original"?

While originality is a notoriously low threshold to meet, two conditions must be satisfied for a 3D model to receive copyright protection. First, the technician must have sufficient scope to express their creative abilities during reproduction by making free and creative choices that reflect the technician's personality. Second, the 3D model must actually reflect the technician's personality to become that author's own intellectual creation and receive copyright protection.[17]

Although 3D reproduction and modelling techniques can be more complex than 2D reproduction, the same questions and factors relevant to 2D reproductions apply to 3D reproduction processes. Knowing this makes it easier to identify what may appear to be a novel question or point of departure in order to find useful analogies when assessing the originality of a 3D model. If a 3D model faithfully reproduces its source, it is more likely a technician has exercised technical choices or minimal creative choices that do not make the 3D model a new original work. But even if the technician makes creative

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pre-existing work and would be protected as such, but no new work of authorship is created. . . . Protection depends on the status of [the pre-existing work]; digitization does not add any new authorship").

[16] *See also* Comment of the European Copyright Society on the Implementation of Art.14 of the Directive (EU) 2019/790 on Copyright in the Digital Single Market (26 April 2020), https://europeancopyrightsociety.org/wp-content/uploads/2020/04/ecs_cdsm_implementation_article_14_final.pdf; Alexandra Giannopoulou, 'The New Copyrigh Directive: Article 14 or when the Public Domain Enters the New Copyright Directive, *Kluwer Copyright Blog* (27 June 2019), https://copyrightblog.kluweriplaw.com/2019/06/27/the-new-copyright-directive-article-14-or-when-the-public-domain-enters-the-new-copyright-directive/.

[17] Case C-469/17, Funke Medien NRW GmbH v Bundesrepublik Deutschland (29/7/2019) ECLI:EU:C:2019:623, paras 19-23; Case C-145/10, Eva-Maria Painer v. Standard VerlagsGmbH, ECLI:EU:C:2011:798.

choices during reproduction, it does not follow that the resulting 3D model is automatically a new original expression.

What is not "original"?

The CJEU has been clear about what originality is not. No matter how much skill, labour, time, money or other resources are involved, copyright will not arise if creative choices are not made and reflected in the work or do not produce an original work. In other words, "significant labour and skill...cannot as such justify [copyright] protection if they do not express any originality."[18] When an expression is predetermined by a specific goal or set by narrow technical or functional rules, the "criterion or originality is not met since the different methods of implementing an idea are so limited that the idea and the expression become indissociable."[19]

With 3D models that are accurate representations, the content of the file is essentially determined by information it contains, such that the information and the expression of the file becomes indissociable. This means that when the 3D model is "entirely characterised by [its] technical function, precluding all originality, it should be considered that it was impossible for the author to express [their] creativity in an original manner and to achieve a result which is the author's own intellectual creation."[20]

It may be that huge amounts of expertise and digital manipulation are required during reproduction, but copyright will not subsist in a 3D model that is not sufficiently original. Such 3D models are more akin to purely informative documents or products of a purely factual nature that require skill and mere intellectual effort, rather than creative effort that produces a new intellectual creation.[21]

What have courts said about copyright and 3D models?

Few courts have assessed the originality of reproductions of public domain works, whether made by photographic or similar technological processes.[22] In the wider context of reproduction, the German Federal Court of Justice in 2018 assessed the originality of photographic reproductions of public domain paintings made by analog film photography in 1992 and held the reproductions required technical skill but were

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[18] Case C-604/10, Football Dataco Ltd and Others v Yahoo! UK Ltd and Others (1/3/2012) ECLI:EU:C:2012:115, para 42.

[19] Case C-393/09, Bezpečnostní softwarová asociace - Svaz softwarové ochrany v Ministerstvo kultury (22/12/2010) ECLI:EU:C:2010:816, para 49.

[20] Case C-469/17, Funke Medien NRW GmbH v Bundesrepublik Deutschland (29/7/2019) ECLI:EU:C:2019:623, para 24; citing Case C-393/09, Bezpečnostní softwarová asociace - Svaz softwarové ochrany v Ministerstvo kultury (22/12/2010) ECLI:EU:C:2010:816, para 49-50 and AS Institute, C-406/10, EU:C:2012:259, paragraph 67; Joined Cases C-403/08 and C-429/08, Football Association Premier League Ltd (04/10/2011) ECLI:EU:C:2011:631, para 98; Case C-833/18 Brompton Bicycle (02/02/2020) ECLI:EU:C:2020:79, para 26.

[21] Case C-469/17, Funke Medien NRW GmbH v Bundesrepublik Deutschland (29/7/2019) ECLI:EU:C:2019:623.

[22] *See* Andrea Wallace, 'Surrogate Intellectual Property Rights in the Cultural Sector' (2023) 2023 Journal of Law, Technology & Policy 303; Margoni (n 2).

not sufficiently original.[23] It should be noted the Court held the photographs were protected by related rights for technical photographs pursuant to a provision of German law which was repealed and revised during the transposition of Article 14 CDSM.[24] This outcome would not occur under the current version of the German Copyright Act.

In the context of portrait photography, the CJEU has noted the standard could be met if the photographer was "able to express [their] creative abilities in the production of the work by making free and creative choices" which could occur "in several ways and at various points in its production"; however, those choices must "stamp the work created with [their] 'personal touch.'"[25] Both the scope for creativity and the decisions made must be assessed. Scope for creativity can arise during preparation, capture or post-production processes due to decisions about the background, subject's pose, lighting, framing, position of the camera, angle of view, moment of capture, atmosphere created, choosing one photo among others, or by using computer software or editing techniques. However, having scope for "free and creative choices" is not equivalent to actually making them. Both conditions must be met in addition to a third: the creative decisions taken by the technician must imprint their personality on the work such that it becomes the author's own intellectual creation.[26]

Taken together, these opinions represent the wariness of courts to recognise new copyright protections in reproductions of existing works.

Compared to 2D reproduction methods, there is greater scope for creative choices with some methods of 3D reproduction. Yet simply having greater possible scope for creative choices does not mean that the 3D model reflects those choices or receives protection as a result. For example, a 2D scan or photograph of a 2D engraving produces a copy of that work. By this logic, 3D scans of 3D objects also produce copies, at least in the raw data or processed model.[27] In such cases, the criterion of originality "is not satisfied where the content of the work is dictated by technical considerations, rules or other constraints which leave no room for creative freedom."[28] Where room for creative freedom exists, it does not follow that creative input was actually involved during reproduction or results in an original 3D model. For example, a 2D photographic

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[23] Museumsfotos, Bundesgerichtshof [BGH] [Federal Court of Justice] Dec. 20, 2018, Case No. I ZR 104/17 [BGHR]. *See also* Eleonora Rosati, 'Digitized images of works in the public domain: what rights vest in them? Analysis of the recent BGH Reiss-Engelhorn judgment - Part 1', *IP Kat* (19 February 2019), https://ipkitten.blogspot.com/2019/02/digitized-images-of-works-in-public.html.

[24] Act on Copyright and Related Rights § 72, BGBI. I, NR. 32 (protecting non-original photographs as "products manufactured employing techniques similar to photography" or "simple-light photographs" which possess "a minimum personal intellectual input" as opposed to "personal intellectual creation" required for copyright, where "the space for free and creative choices is almost absent").

[25] Case C-145/10, Eva-Maria Painer v. Standard VerlagsGmbH, ECLI:EU:C:2011:798 paras. 89–92 (Dec. 1, 2011) (referencing, a contrario, Joined Cases C-403/08 and C-429/08, Football Association Premier League and Others, 2011 E.C.R. I-9083 para. 98).

[26] Case C-469/17, Funke Medien NRW GmbH v Bundesrepublik Deutschland, ECLI:EU:C:2019:623 para. 19 (29 July 2019); Painer, C-145/10, paras. 87-89.

[27] For example, scanning techniques like structured light scanning, LiDAR/laser scanning or X-Ray Computer tomography are similar in that the technician is motivated by making a realistic digital representation.

[28] SAS Institute Inc v World Programming Ltd [2013] EWCA Civ 1482.

reproduction of a sculpture can lack creative input. Even when free and creative choices are made, the reproduction itself might lack the technician's personal stamp.[29] Accordingly, a 3D model produced by multiple non-original 2D photographs taken at various angles, *i.e.*, photogrammetry, can be non-original as a result.[30]

2.1.2. Related rights in "other photographs"

Article 6 of the 2006 Copyright Term Directive allows member states to protect non-original works produced using photographic technologies.[31] These related or neighbouring rights reward the time and skill required to make the non-creative materials. In member states like Sweden, Germany, Italy, and Spain, such lesser protections range from 15 to 50 years from publication, with some even extending limited moral rights.[32] The application of related rights to digitised public domain artworks is now prohibited by Article 14 CDSMD, as discussed below.

2.1.3. Article 14 and 3D models

Article 14 of the CDSM Directive obligates member states to ensure that:

> [W]hen the term of protection of a work of visual art has expired, any material resulting from an act of reproduction of that work is not subject to copyright or related rights, unless the material resulting from that act of reproduction is original in the sense that it is the author's own intellectual creation.[33]

The purpose of Article 14 is to end the longstanding practice of claiming copyright in non-original reproductions and reinforce that resulting materials must be the author's own intellectual creation to attract new copyrights.[34] It therefore closes gaps in EU and

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[29] Antiquesportfolio.com PLC v. Rodney Fitch & Co. [2001] F.S.R. 345, 345 (finding evidence of creative freedom "in the lighting, angling and judging the positioning" of photographs of antique furniture, sculptures, glassware, and metal-work); *see also* THJ Systems Ltd & Anor v Sheridan & Anor [2023] EWCA Civ 1354, which clarifies that UK copyright law requires a work to be the "author's own intellectual creation" to receive protection.

[30] For example, multi-imaging techniques like photogrammetry or focus stacking calculate a 3D model by taking photographs of a 3D subject from multiple angles, whether using a smartphone or more professional photography equipment like a DSLR and polarised lights. The 3D model is then processed through software that combines multiple distinct 2D photographs of the 3D object, a format transfer that typically opens scope for creative decisions to be made. Even so, there will be minimal potential for copyright to arise in the images when the goal is to, for example, use lighting that sufficiently illuminates an object for the purpose of faithful reproduction.

[31] The Article 6 provision provides: "Photographs which are original in the sense that they are the author's own intellectual creation shall be protected . . . . No other criteria shall be applied to determine their eligibility for protection. Member States may provide for the protection of other photographs." Directive 2006/116/EC of the European Parliament and of the Council of 12 December on the term of protection of copyright and certain related rights OJ L 372/12, Art. 6.

[32] *See* Margoni (n 2).

[33] Directive (EU) 2019/790, of the European Parliament and of the Council of 17 April 2019 on Copyright and Related Rights in the Digital Single Market and Amending Directives 96/9/EC and 2001/29/EC, Art. 14.

[34] *See also* 'Implementation status of the DSM directive across the EU,' *Communia*, https://eurovision.communia-association.org/; Paul Keller, 'Implementing the Copyright Directive:

national legislation that previously allowed member states to protect "other photographs" in the context of digital surrogates of public domain artworks.

What does this mean for 3D models?

To answer this, three aspects of Article 14 require further examination:

(a) *"when the term of protection of a work of visual art has expired"*

First, Article 14 applies to only a *work of visual art* such as paintings, drawings and prints, rather than all creative works and other cultural heritage items, such as books, scientific models, machines, coins, craft, antiquities, ethnographic materials, architectural features, historical, or architectural sites, and so on.

Second, Article 14 applies to works of visual art for which **the term of protection has expired**. Given the history of copyright, many visual artworks were created long before they were legal eligible for copyright protection.[35] Since they were never protected by copyright, they have never been subject to a term that has expired. The broader category of "public domain works" includes both out-of-copyright works and works that precede copyright protection. Read literally, however, Article 14 applies to only out-of-copyright works of visual art. Despite this, Article 14 should be interpreted teleologically in light of the Commission's longstanding efforts to ensure public domain materials remain in the public domain once digitised.

(b) *"any material resulting from an act of reproduction of that work"*

Article 14 broadly applies to **any** material resulting from an act or reproduction, such as data, metadata, paradata, software, code, photographs, scans, raw data, models and other outputs.

It should also be noted that Article 14 applies to **an act of reproduction**, rather than a category of individuals, private or public organisations or public bodies. Article 14 therefore applies to *anyone* engaged in an act of reproduction, including commercial entities and members of the public.

(c) *"not subject to copyright or related rights unless [it] is original in the sense that it is the author's own intellectual creation"*

Protecting the Public Domain with Article 14,' *Communia* (25 June 2019), https://communia-association.org/2019/06/25/implementing-copyright-directive-protecting-public-domain-article-14/.

[35] Historically, lawmakers granted national protection to creative works gradually and according to subject matter, with protection for paintings typically recognised much later than protections for engravings and other print media. In Britain, engravings received protection from 1735; paintings were not recognised until 1862. Some conditioned protection on other bases. In France, a 1777 Royal Decree protected paintings by recognised academy members. A 1793 Act extended protection to all painters and illustrators. Fine Art Copyright Act 1862, 25 & 26 Vict., c.68 (1862); Décret de la Convention Nationale du dix-neuf juillet 1793 relatif aux droits de propriété des Auteurs d'écrits en tout genre, des Compositeurs de musique, des Peintres et des Dessinateurs (1793).

Article 14 is not an outright cancellation of copyright in reproduction materials. The text is circular in saying that, to receive copyright protection, the materials must meet the EU copyright standard for protection—but this has always been the case. Instead, Article 14 is a cancellation of related rights to the specific subject matter that falls within its scope.

From this, we can distil the following outcomes:

1. For **member states with related rights provisions**, such protections:
   a. **Are no longer available** to materials resulting from an act of reproduction involving out-of-copyright works of visual art;
   b. **Remain available** to materials resulting from an act of reproduction involving:
      i. Works of visual art that have never been protected by copyright; and
      ii. All other public domain works regardless of any former copyright protection status.
2. For **all member states**, materials resulting from an act of reproduction of **any** public domain work are eligible for copyright protection **if** they are original in the sense that they are the author's own intellectual creation.

It is important to note that these outcomes may change depending on how member states have transposed Article 14.

How have member states implemented Article 14?

Member states without "other photographs" protections were not obligated to reform national copyright laws. For example, **Belgium, France, Hungary, Luxembourg, the Netherlands, Poland** and **Slovakia** declined to transpose Article 14.[36] The concern was that including a new provision in copyright legislation could introduce confusion and ambiguity since the author's own intellectual creation threshold already applies to all categories of works, rather than just works of visual art.[37]

By contrast, some countries transposed its text despite not having related rights protections in national law. **Croatia** transposed Article 14 by including its full text in Article 18 on "Unprotected creations."[38] During the consultation process, Croatia's cultural heritage sector asked legislators for the phrase "work of art" to be included instead of "work of visual art," but the proposal was not accepted. Similar transpositions have occurred in **Estonia, Latvia, Portugal,** and **Romania**.[39]

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[36] *See* Andrea Wallace, 'Article 14 and the Public Domain - the State of Play across Europe' (*Europeana PRO*, 1 February 2024) 14 <https://pro.europeana.eu/post/article-14-and-the-public-domain-the-state-of-play-across-europe> accessed 8 April 2024.. Thank you to members of the Article 14 Task Force.

[37] *See* 55 2608/001 Explanatory Memorandum p. 12-13, https://www.dekamer.be/FLWB/PDF/55/2608/55K2608001.pdf

[38] Zakon o autorskom pravu i srodnim pravima, Art. 18, n. 8, *Narodne Novine*, No 111/2021, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=NIM:202107072.

[39] *See* Wallace, 'Article 14 and the Public Domain - the State of Play across Europe' (n 33)..

Member states with "other photograph" protections have taken various approaches. Both **Sweden** and **Germany** reformed their "other photographs" provisions to go beyond the scope of Article 14. Article 49 of **Sweden**'s revised Copyright Act excludes protections for photographs of "works of art for which copyright no longer applies," rather than only works of *visual* art.[40] Although Article 49 applies to only photographic images or comparable reproduction technologies, the Swedish Government has clarified that, to the extent a certain technology falls outside the category of photographic images, the Copyright Act does not offer any protection if it does not meet the requisite copyright threshold.[41]

Germany also expanded Article 14's reach. Section 68 of the German Copyright Act excludes "reproductions of visual artworks in the public domain" from being protected by the related rights recognised for photographic works and products manufactured in a similar manner to photographs, such as 3D digitisations and other reproduction media.[42] Notably, the provision applies to visual artworks "in the public domain" rather than only out-of-copyright works. It is also retroactive by applying from the moment of the source work's copyright expiry, even where the reproduction was made prior to that copyright's expiry.[43]

Some member states adopted a narrow view of Article 14. **Austria, Denmark** and **Spain** revised "other photograph" provisions to apply only to works of visual or fine arts for which copyright has expired. Both **Denmark** and **Spain** transposed the provision verbatim after the implementation deadline to avoid penalties. Both countries plan to revisit and revise their legislation at a later date.

The specific cases of **Italy** and **Greece** are addressed in Section 2.2.2.[44]

How are non-member states approaching this issue?

Given their representation in Europeana, **Switzerland** and the **United Kingdom** are also worth highlighting.

In **Switzerland**, the Federal Act on Copyright and Related Rights protects "works," including "artistic intellectual creations with individual character, irrespective of their value or purpose."[45] Article 2(2) recognises the protection of "photographic works" and "works of scientific or technical content…such as three-dimensional representations" having individual character.[46] As of 1 April 2020, the Act also recognises related rights,

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[40] Act (1960:729) on Copyright to Literary and Artistic Works, §49a.

[41] *See* https://data.riksdagen.se/fil/75F8A900-2DA8-45A4-965B-3FAD804ACF91

[42] Act on Copyright and Related Rights (Urheberrechtsgesetz – UrhG), Section 68, Reproductions of works of visual arts in the public domain.

[43] *See also* Germany, Eurovision DSM Contest, *Commnia*, https://eurovision.communia-association.org/detail/germany/.

[44] *See also* Giulia Dore and Giulia Prioria, 'The EU imperative to a free public domain: The case of Italian cultural heritage,' *Communia*, https://communia-association.org/2024/04/29/the-eu-imperative-to-a-free-public-domain-the-case-of-italian-cultural-heritage/.

[45] 231.1 Federal Act of 9 October 1992 on Copyright and Related Rights (Swiss Copyright Act), Art. 2(1).

[46] Swiss Copyright Act, Art. 2(2)(g), (d).

stating that "photographic depictions and depictions of three-dimensional objects produced by a process similar to photography are considered works, even if they do not have any individual character" and are protected for 50 years after their production.[47]

Lastly, in the **United Kingdom**, a 2023 Court of Appeal case held that the "author's own intellectual creation" standard applies in the UK.[48] Previously, the question was whether the UK's "skill, labour and/or judgement" standard applied, as well as whether this standard aligned with or deviated from the EU's "author's own intellectual creation" standard.[49] The UK Intellectual Property Office issued a copyright notice in 2015 concluding that digital surrogates failed to meet the applicable EU standard, but it had minimal impact on the sector's practices.[50] The Court of Appeal, in effect, clarifies that UK copyright law is in line with the EU's standard, which was harmonised in 2006 and at a time when the UK remained a member state.[51]

2.1.4. Data layers, rights assertions and ownership

As discussed, certain aspects or outputs of the reproduction process may attract copyright or other rights. However, it does not follow that the 3D model as a whole is therefore protected.

Copyright and other rights can arise in the:

- **Underlying public domain work**, such as rights in personal data, Indigenous rights, ownership rights or rights arising in cultural heritage law;
- **3D model**, such as copyright or related rights in the model as a whole;
- **Expressive elements or layers contributed to the model**, such as expressive modifications or an original data layer that contains expressive colouring, rather than the model as a whole;
- **Data, metadata or paradata**, such as expressive prose or descriptions, as well as dates, names and other short phrases and facts in which copyright does not arise;
- **Database**, such as copyright in the creative selection and arrangement of data or *sui generis* rights in the database or dataset.
- **Separate creative elements**, such as creative decisions about the digitisation process, workflow or other outputs produced during digitisation which may involve creativity and produce a new original work, but such that the separate

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[47] Swiss Copyright Act, Art. 2(2)(g), (d).
[48] THJ Systems Ltd & Anor v Sheridan & Anor [2023] EWCA Civ 1354.
[49] In 2012, the Privy Council addressed the author's own creation standards, finding no difference in substance between originality as assessed in *Painer* by the Austrian Supreme Court, the CJEU and UK courts "in terms of copyright if the task of taking the photograph leaves ample room for individual arrangement." Temple Island Collections Ltd. v. New English Teas Ltd. [2012] EWPCC 1, 20.
[50] Intellectual Property Office, Copyright Notice: Digital Images, Photographs and the Internet, U.K. GOV'T, https://www.gov.uk/government/publications/copyright-notice-digital-images-photographs-and-the-internet/copyright-notice-digital-images-photographs-and-the-internet.
[51] *See also* https://ial.uk.com/important-copyright-originality/.

creative element or output protected by copyright does not impact the public domain status of the 3D digitisation.

Below we focus on questions of copyright and subsequent ownership arising around these new materials.

3D model

Some born-digital models will receive copyright protection, even where they aim to be representative.[52] This is because the modelling process may require expressive interpretations, such as reconstructing a 17th century farmhouse based on artistic renderings and historical information known about the structures. These models will be protected so long as creative choices made during their production imprint the technician's personality on the 3D model.

Expressive elements or layers contributed to the model

Situations also arise where some but not all parts of a model may attract copyright protection.[53] This might arise in a simple modification, such as adding an appendage to a sculpture, or a new data layer of expressive colouring. More complex models might incorporate rights-protected data or materials during the modelling process, or combine one or more techniques to produce more accurate modelling outcomes.

It is useful to identify the different types of data and files that can result from 3D models, as well as to question whether copyright arises and, if so, in what. This might include independently assessing the:

- **Input data**, in terms of raw data captured at the digitisation stage
- **Project files**, meaning the 3D model with some processing or clearing of raw data inputs
- **Expressive data**, in terms of expressive elements or layers contributed to the non-original model
- **Archival data**, meaning the highest quality and fidelity output files
- **Derivative 3D data**, including models produced from the archival data for publication and access purposes

Input data and project files are highly unlikely to attract new rights where they are made using technological standards or for documentation purposes. Even if expressive data has been added, new rights arise only in the new expressive content contributed to a 3D model.[54]

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[52] Born digital modelling involves a 3D artist, technician or designer building a 3D reconstruction or model using composite data. The model may be based on an existing 3D model, incorporate new information or illustrate an object from scratch.

[53] For a more detailed discussion of 3D reproduction, *see* https://glam3d.org/. *See also*

[54] Osment Models, Inc, v Mike's Train House Inc, No. 2:09-CV-04189-NKI, 2010 WL 5423740 (W.D. Mo. Dec. 27, 2010) (holding digital models of public domain railway and gas stations not intended to be exact replicas satisfied originality, but only in the new expressive content). President & Fellows of Harvard College v Ellmore, 222 F. Supp. 3d 1050 (D.N.M. 2016).

It is also important to note that the use of suboptimal reproduction technologies or software can produce 3D models that, to the user, may appear to be the author's own intellectual creation given how much they diverge from the source object. This is particularly true given how developed 3D technologies have become, and that all older technologies were cutting-edge at some point. Additional work may be required to improve the quality of the 3D model. However, without the requisite creativity, these models and additional efforts to improve them by increasing their fidelity to the source will not attract protection.[55]

Data, metadata, databases and datasets

Copyright can arise in expressive or descriptive data that is sufficiently creative. An example includes expressive prose in annotations in an interactive Sketchfab model. These types of works qualify as separate original literary works under copyright law.

Descriptive data can include contextual information about the object, the model, and how it was produced and processed. In some cases, this may be more straightforward, such as the name of the work, year of creation, dimensions, physical location, or institution, and therefore are non-original or not protectable as a matter of law. Indeed, copyright laws exclude the protection of basic information such as short phrases or facts. More descriptive contextual information or prose can receive copyright protection as a separate literary work if sufficiently original.

Copyright can arise in the creative selection and arrangement of data, as well as the structure of a database. In addition, *sui generis rights* can arise in the content of a database where a substantial investment has been made.[56] These rights should not be invoked to apply copyright or similar restrictions to a non-original 3D model. This is discussed in more detail in Section 2.3.2.

Rights in metadata, if arising, will not impact the copyright status of the 3D model.

Importantly, Europeana requires that data providers mark metadata contributed to the platform as CC0, including any original descriptions, expressive prose, etc.

Separate creative elements

As a final matter, because copyright protects only new expressive elements or materials created during an act of reproduction, copyright may arise in materials which are not the 3D model.[57] Creative input might occur during the design stage, when developing code or designing a workflow or other processes that are entirely separate from the model. These instances necessitate deeper examinations of which components and outputs attract new rights, rather than applying a copyright statement to the model as a

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[55] *See, e.g.,* Wooden tankard - 16th century, which notes "the model is an improved low poly version of the [3D digitisation made available by MicroPlasts]."
https://www.europeana.eu/en/item/181/share3d_272
[56] Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases, OJ L 77 (27 March 1996).
[57] President & Fellows of Harvard College v Ellmore, 222 F. Supp. 3d 1050 (D.N.M. 2016).

whole. It is important to note that the Europeana Data Model allows for only one rights label to be associated with the 3D object published on Europeana.eu.

Rights ownership and licences

The first owner of the copyright will be the person or team who created the original subject matter. Shared ownership of the copyright can arise through joint authorship (*i.e.*, in copyright law) or contractual terms included in formal agreements (*i.e.*, contract law). Rights owners can include:

- **An employee or independent contractor**, such as the technician, editor, other team member
- **A third party**, such as a volunteer or project partner
- **A team of individuals**, who jointly produce the work
- **An employer or other party**, who creates the employment relationship or commissions the work
- **A project**, which has negotiated to share, transfer or waive rights in the contract

Only a rights owner can assign a copyright-based licence to a 3D model—and only if it is sufficiently original to attract copyright protection.

2.2. Do other rights arise in 3D models?

Other rights may arise, but only third-party rights or legislation which impose negative obligations prevent data providers from contributing 3D models as CC0 or PDM.

These other rights might arise in the underlying work or during the reproduction process. Where new rights subsist and are owned by the data provider, CC0 can be used to ensure the 3D model is available for unrestricted reuse. Below we provide a high-level summary of such rights to enable their identification and mitigation before or during 3D projects.

2.2.1. Moral rights

Moral rights can affect the underlying work and will vary by country, both in terms of the type of right recognised (*e.g.*, right of attribution or integrity) and scope of protection. Moral rights can also arise in an original 3D model.

As an example, moral rights in **France** apply to out-of-copyright works, but not works that were never protected by copyright.[58] **France** defines moral rights to be perpetual, inalienable and imprescriptible.

A precondition of moral rights is that copyright must first subsist in the work. Moral rights are not designed to prevent the copying of public domain works or data, or the

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[58] *See* Copyright in France, CASALONGA, https://www.casalonga.com/documentation/droit-d-auteur/le-droit-d-auteur-en-france-230/Copyright-in-France.html?lang=en#:~:text=The%20moral%20right%20is%20perpetual,right%20passes%20to%20his%20heirs

publication and dissemination of non-original documents created by public bodies. Accordingly, moral rights in an underlying work should not be used to restrict the reuse of a non-original model. To do so conflicts with current law and legal developments in the area of copyright and public sector information.

2.2.2. Property and cultural heritage laws

Even in the absence of copyright protection, owners can condition access to objects for digitisation on contractual restrictions that limit onward use of the 3D model. These owners might include museums, heritage site owners, local authorities, municipalities or donors who insert restrictions into donor agreements.

When providing access to a physical site or cultural heritage object, an owner might limit the onward use of the 3D models or other materials, like research data, documentation or photographs, or impose other prohibitions.[59]

With respect to cultural heritage laws, some member states have national legislation that recognises rights in the underlying object or site which are held by the state, host institution or public at large. In effect, the 3D model may be non-original and in the public domain, but the object it depicts will be subject to a separate right that restricts use of the 3D model. Some illustrative examples include:

- In **Italy**, Article 107 and 108 of the Italian Cultural Heritage Code regulate the reproduction of publicly owned cultural heritage that possesses archival, artistic, historical, archaeological, or anthropological value.[60] The Italian transposition of Article 14 cites the Cultural Heritage Code in limiting the free reuse of digital surrogates of publicly owned cultural heritage in the public domain for commercial purposes, requiring both the host institution's authorisation and a fee payment.[61]
- In **Greece**, Article 46 of the Cultural Heritage Code requires permission from the Ministry of Culture for the production, reproduction, and dissemination to the public of any digitisations of publicly owned monuments, immovable monuments located in archaeological and historical sites, and movable monuments held in museums and public collections.[62] Article 14 does not affect

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[59] *See* Andrea Wallace and Ellen Euler, 'Revisiting Access to Cultural Heritage in the Public Domain: EU and International Developments' (2020) 51 IIC - International Review of Intellectual Property and Competition Law 823. *See also* Pierre Noual, 'Photographier au Musée: Guide de sensibilisation juridique à l'usage du visiteur-photographe' (2017).

[60] Decreto Leggislativo 22 gennaio 2004, n.42, § II, art. 108 (It.) *See also* Giulia Dore and Giulia Priora, 'The EU imperative to a free public domain: The case of Italian cultural heritage,' *Communia*, https://communia-association.org/2024/04/29/the-eu-imperative-to-a-free-public-domain-the-case-of-italian-cultural-heritage/.

[61] *See* https://communia-association.org/2023/07/10/tales-of-public-domain-protection-in-italy/.

[62] Law 4858/2021, Article 46, paras 4-5. *See* Marina Markellou, 'Cultural Heritage Accessibility in the Digital Era and the Greek Legal Framework' (2023) 36 International Journal for the Semiotics of Law - Revue internationale de Sémiotique juridique 1945.

the provisions of the Cultural Heritage Code that require permission for use of protected subject matter.[63]

- In **France**, a provision in the Code du patrimoine (Heritage Code) requires permission from a building's custodian for commercial use of images of buildings protected as national domains.[64]

It should be noted that the Stuttgart Court in Germany recently declined to extend liability under the Italian Cultural Heritage Code to a German company for reproducing Leonardo da Vinci's *Vitruvian Man* on a puzzle, holding that the right was limited to the national boundaries of Italy.[65] In other words, the right cannot be enforced outside of Italy to restrict the reuse of public domain cultural heritage held in Italian public institutions due to the principle of territoriality and state sovereignty.[66]

2.2.3. Cultural rights and ethical considerations

Cultural rights, ethical standards, and other limitations can, or at least should, impact the rights assessment of some 3D models.[67] These relate to Indigenous rights and data sovereignty, traditional knowledge and cultural expressions, ancestral remains, culturally sensitive materials, collections with colonial contexts, or other rights that may be recognised by the community or country of origin.[68]

Where the source object is held by an institution outside of that community or country of origin, the question is then whether the host country's national legislation recognises such rights. Regardless, organisations can voluntarily honour the rights recognised at national levels by the country of origin or at local levels by the relevant individual, group or descendant community.[69]

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[63] ibid.

[64] Section L.621-42, as amended by the Act of 7 July 2016. See FrenchKat, 'French Constitutional Court Rejects Challenge to Image Right in National Monuments' (The 1709 Blog, 8 February 2018) <http://the1709blog.blogspot.com/2018/02/french-constitutional-court-rejects.html> accessed 5 March 2018. *See also* Décision n° 2017-687 QPC du 2 février 2018, Association Wikimédia France et autre [Droit à l'image des domaines nationaux], https://www.conseil-constitutionnel.fr/decision/2018/2017687QPC.htm

[65] Landgericht Stuttgart 17 O 247/22, Ravensberger AG, Verlag GmbH, S.r.l. v Ministero della Cultura, Gallerie dell'Accademia de Venezia.

[66] *See* http://www.personaemercato.it/wp-content/uploads/2023/05/Osservatorio.pdf

[67] Matthew Magnani, Anni Guttorm, Natalia Magnani, 'Three dimensional, community-based heritage management of indigenous museum collections: Archaeological ethnography, revitalization and repatriation at the Sámi Museum Siida' [2018] 31 Journal of Cultural Heritage 162-169, https://www.sciencedirect.com/science/article/pii/S1296207417304909?via%3Dihub.

[68] *See* Global Indigenous Data Alliance, https://www.gida-global.org/; CARE Principles for Indigenous Data Governance https://www.gida-global.org/care.

[69] *See e.g.,* Protection of Traditional Knowledge and Cultural Expressions Act (No. 33 of 2016) (Kenya).

Lastly, reasons related to security, cultural sensitivities or other ethical questions may restrict aspects of a model in the sense that access should not be provided to that sensitive information.[70]

Copyright-based licences or statements should not be used to restrict use in place of cultural and ethical statements. Applying either copyright-based licence or a public domain statement to the 3D model can create conflict with the cultural rights held in the source object and its data, raising both legal or ethical concerns. Wherever possible, data providers should ensure that the digitisation and publication of such materials does not violate cultural rights or ethical standards.

2.2.4. Contractual rights in project agreements

As discussed in Section 2.2.2, contracts with owners can limit the reuse of 3D models or their source objects. Assuming that the 3D model has attracted copyright, contractual rights in project agreements can also restrict the work.

Digitisation partnership agreements may share rights ownership among collaborators, require rights transfers or assignments to a specific party or impose restrictions on public reuse.

In light of this, organisations are increasingly inserting open access terms in contracts to ensure project outputs will be released as public domain or under open licences as an affirmative obligation.

National, international, and private funders are increasingly adopting open licensing requirements for materials produced by funded projects. In this way, funders are using contractual agreements to ensure that new rights do not prevent public access and reuse of funded outputs.

2.2.5. Other data and database rights

As raised in Section 2.2.3, privacy or data protection rights can apply to data through national or EU laws protecting the rights of living individuals.

Sui generis rights can arise in the arrangement of a database where a substantial investment has been made in either obtaining, verifying, or presenting the database content.[71] The Database Directive defines a database as "a collection of independent works, data or other materials which are arranged in a systematic or methodical way and are individually accessible by electronic or other means."[72] However, a distinction

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[70] *See, e.g.,* Roshni Khunti, 'The Problem with Printing Palmyra: Exploring the Ethics of Using 3D Printing Technology to Reconstruct Heritage,' [2018] 2(1) Studies in Heritage 1-12; Rebecca Kahn and Rainer Simon, 'Skulls, skin and names: The ethics of managing heritage collections data online' [2023] in Chiara Pallladino & Gabriel Bodard (eds) *Can't Touch This: Digital Approaches to Materiality in Cultural Heritage* (London: Ubiquity Press).
[71] Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases (Database Directive), OJ L 77 (27 March 1996).
[72] Database Directive, Art. 1(2).

should be drawn between a database and its individual components. The database right protects the collection of data, not its constituent elements. Only a database that involves a "substantial investment" will receive protection, which can include "human, technical and financial resources" in terms of "quantity or quality or a combination of both."[73] Importantly, a substantial investment in creating data that forms part of a database will not automatically attract the database right without a separate investment in the organisation and arrangement of the database itself.

Sui generis rights are first held by the maker of the database which can include, for example, the maker's employer. The rights holder can prevent the extraction or reuse of all or a substantial part of its content. The protection is automatically granted and lasts for 15 years from the creation date or date at which the database was published. While they are unlikely to arise in most 3D models, rights holders can waive database rights using CC0.

2.2.6.   Exceptions in the Open Data Directive

Lastly, the 2019 Open Data Directive encourages member states to promote the creation of datasets and documents produced by the public sector based on the principle of "open by design and by default."[74] This includes "documents" produced by a public sector body within the performance of a public task, such as a public undertaking engaged in digitisation.[75] The Directive includes exceptions for cultural heritage institutions on exclusive partnerships and high-value datasets.[76]

Article 12 on "exclusive agreements" recognises the importance of private partnerships and the need for exclusive rights to attract private partners, noting in Recital 40 that "a certain period of exclusivity might be necessary."[77] It recommends this period should be "limited to as short a time as possible in order to comply with the principle that public domain materials should remain in the public domain once it is digitised."[78] Article 12(3) specifies it should last no longer than ten years, subject to review, and requires that arrangements are transparent and made public. Institutions must receive free copies of the digital resources, which require publication upon the agreement's expiration.[79] How the Data Governance Act may affect this "embargo" needs further attention.

Article 14(4) exempts cultural institutions from making high-value datasets available free of charge. Most 3D models will not be considered a high-value dataset according to

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[73] Database Directive, Recital 7, Art. 7(1).
[74] Open Data Directive, Recital 16.
[75] Recital 30 notes the term "'document' should cover any representation of acts, facts or information – and any compilation of such acts, facts or information – whatever its medium (paper, or electronic form or as a sound, visual or audiovisual recording)."
[76] For an in depth analysis of the interplay between the Open Data Directive and Article 14 of the CDSM Directive, *see* Wallace and Euler (n 55).
[77] Open Data Directive, Art. 12.
[78] Open Data Directive, Recital 49.
[79] Open Data Directive, Art. 12(3).

instruments such as the Commission Implementing Regulation (EU) 2023/138.[80] Even so, there is no general obligation to proactively make raw data available to the general public.

Both articles can apply to an exclusive agreement that produces a high-value dataset. For example, a high-quality capture of a historical architectural site involving private partners will produce an enormous dataset that can be used to generate derivative models for multiple purposes. For these types of models produced by public-private partnerships, the *No Copyright - Non-Commercial Use Only* label can be used where partners have agreed to limit commercial uses of the digital surrogate by third parties.[81]

It is worth noting that members of the public have successfully used legal obligations on providing public sector information and other documents to obtain copies of 3D models, including models in which a host institution claims a new copyright.[82]

2.3.   Decision matrices for copyright assessments

As demonstrated, decisions can arise at various stages of a 3D modelling project. These might be entirely creative, or they may be dictated by industry guidelines, technologies, software, or other parameters. Indeed, many decisions have seen increased automation, such as with platform settings to enhance colour, remove unwanted shadows, add new shadows or lights sources, and so on. At base, if the goal is to create a 3D model that represents its source as accurately as possible, most decisions are technical and driven by the physical properties of the object or technology most appropriate for reproduction. Even if creative, such input may be insufficient to warrant a new copyright in the 3D model.

Below, we map the landscape of decisions arising during the stages of:

- Table 1. Pre-production selection processes
- Table 2. Production selection processes
- Table 3. Post-production selection processes

The aim is to demonstrate the spectrum of technical choices compared to creative choices to evaluate originality. A single creative decision or creative outcome at a given stage is insufficient to assert copyright in the model as a whole. Instead, decisions should be considered in the aggregate and according to the following questions:

Question 1:   Is there scope for creative decisions to be taken?
Question 2:   If yes, are creative decisions, in fact, taken?

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[80] Commission Implementing Regulation (EU) 2023/138 of 21 December 2022 laying down a list of specific high-value datasets and the arrangements for their publication and re-use (20/01/2023) OJ L 19/43.
[81] *See* https://rightsstatements.org/page/NoC-NC/1.0/?language=en
[82] *See* Cosmo Wenman, 'Nefertiti 3D Scan FOIA' (*Cosmo Wenman*, 29 October 2019) <https://cosmowenman.com/nefertiti-3d-scan-foia-project/> accessed 2 August 2022. *See also* https://feral.law/publications/un-musee-condamne-a-communiquer-les-numerisations-3d-doeuvres-dart-tombees-dans-le-domaine-public/; https://creativecommons.org/2019/11/20/reproductions-of-public-domain-works/.

Question 3:   If yes, do those creative decisions result in a new work that is the author's own intellectual creation?

Table 1. Pre-production selection processes

Activity	Technical decisions	Creative decisions	Outcome
Selecting items for digitisation, *i.e.*, from the wider collection, selecting, for example, costume and textiles, pottery, zoological materials, fossils, armour and weapons, fine arts, scientific illustrations, music sheets, maps	When selection is dictated by the project, the organisation, budgets, staffing, equipment or other limitations	The selection process must be within the ambit of the organisation or technician, there must be scope for creative choices to be made during selection, those creative choices must be taken, and they must result in a curatorial outcome that is sufficiently original as a whole	In most cases, there is no scope for free and creative choices relevant to copyright protection for the digital surrogate during the selection process. Where the selection process involves free and creative choices, rights may arise in those separate creative elements, meaning the choices taken as a whole, rather than in the individual digitised models. These are more akin to database rights.
Selecting the digitisation process, *i.e.*, photogrammetry, RTI scanning, 3D scanning	When selection is based on the technologies available to the technician or determined by the process identified as best suited for the object	*Unlikely scope for free and creative choices*	In most cases, these decisions are technical or guided by industry best practice.
Selecting processing software, *i.e.*, such as open source or proprietary software, Agisoft Metashape, Reality Capture, FabScan	When selection is based on the software available to the technician or determined by the software identified as best suited for the object	*Unlikely scope for free and creative choices*	In most cases, these decisions are technical or guided by industry best practice.
Selecting equipment, *i.e.*, the scanner, fisheye or macro lenses, turntables, backdrop, targets, circle polarising filters, tripods, remote controls, drones, or other optional equipment	When selection is based on the equipment available to the technician or determined by the equipment identified as best suited for the object	The selection process must include scope for creative decisions regarding filters, object positioning, or other methods that result in a non-representational 3D model	In most cases, these decisions are technical and guided by industry best practice.

Table 2. Production selection processes

Activity	Technical decisions	Creative decisions	Outcome
Camera or scanner set-up, *i.e.*, adjusting height of tripod and camera distance depending on object size, selecting whether the camera should be upright or at another angle to capture every part of the object	Choosing angles, positions, and settings (*e.g.*, lens, exposure, focus, resolution) that best capture the object data	*Unlikely scope for free and creative choices*	In most cases, these decisions are technical and guided by industry best practice.
Positioning or arrangement of objects, *i.e.*, a single static object, a single malleable object such as arranging clothing on a dress model, multiple objects in one space, or a larger environment that involves multiple objects and their arrangement such as a room	Choosing the position of the objects and their arrangement based on decisions that best capture the object data or the surrounding environment, including rooms as they were once staged	Choosing the objects and their arrangement to create a visual effect, movement, or other sorts of expressive input	In most cases, these decisions are technical and guided by industry best practice. When multiple objects are involved, there may be greater scope for free and creative choices to be made in the selection of the objects and in their arrangement. In both cases, it is unlikely that such choices will produce an original model that is the author's own intellectual creation.
Lighting, *i.e.*, selecting the right amount of lighting to ensure the image is lit but there is no reflection, angling the light away from a reflective spot, making sure any indents or engravings are lit correctly to ensure they are visible in the final model	Choosing the appropriate lighting conditions, manipulating lighting, maintaining a consistent level of exposure, avoiding lens flare, etc	Choosing and adjusting lighting conditions (*e.g.*, neon colours) to create a specific effect on the 3D model that results in a more expressive and less representational model	In most cases, these decisions are technical and guided by industry best practice. When lighting obscures or changes the object's representation during digitisation, the result is more likely to be an expressive 3D model subject to a new copyright. However, it should not be advertised as a representational 3D model of the source object.
Capture settings or reproduction parameters, *i.e.*, the number of photographs to comprise a 3D model made by photogrammetry, calibration settings to improve documentation	Choosing the number of photographs, determining the level of overlap needed, rotating the turntable, taking detail shots of specific features to ensure detail is captured, as well as calibration settings for spacial or colour capture to more accurately document geometry and colour data	*Unlikely scope for free and creative choices*	In most cases, these decisions are technical and guided by industry best practice.

Table 3. Post-production selection processes

Activity	Technical decisions	Creative decisions	Outcome
Selection of photographs or models for processing, *i.e.*, removing any identical photographs, making sure no photographs are missing, ensuring the photographs are numbered correctly	Choosing which photographs or models are appropriate for post-production and removing shots or data that is blurry, includes lens flare, poorly exposed or framed, etc	*Unlikely scope for free and creative choices*	In most cases, these decisions are technical and guided by industry best practice.
Automated mesh, *e.g.*, whereby a mesh is automatically generated based on the points in the point cloud in Agisoft Metashape by selecting the Build Mesh command from the Workflow menu	Software processing that automatically converts the point cloud into a solid surface, automatic texture wrapping, etc	*Unlikely scope for free and creative choices*	In most cases, these decisions are technical and guided by industry best practice.
Human-modified mesh, *e.g.*, using [MeshLab] to edit, clean, heal, inspect, render and convert the mesh from a point cloud	Adding base colours, textures, adjustments using confidence values, manually editing the mesh to fill holes in data	Adding non-representative and creative colours, textures, manually editing the mesh to account for missing parts of an object, predicting how it may have looked originally, or making an artistic representation of it	In most cases, these decisions are technical and guided by industry best practice. When decisions are creative and change the object's representation, the result is more likely to be an expressive 3D model protected by a new copyright. However, it should not be advertised as a representational 3D model of the source object.
Editing and publication processes, including the selection of 3D viewers, editors, rendering engines, and options within them, *e.g.*, Sketchfab viewer and editing software, Shapeways tools to prepare the model for 3D printing, Blenders post-production modelling tools	Setting orientation and pivot points, use of 'Lit' or 'Shadeless' modes, choices of pre-selected backgrounds, use of ground shadows, shadow catchers, sharpness, tone mapping, annotations, reflections, depth of field settings, colour balance, etc	Creating a signature or customised look that deviates the model from the source object and transforms it beyond a faithful reproduction into something unique or creating an expressive template of editing processes that involve creative choices for batch file processing	In most cases, these decisions are limited by the software or platform chosen or guided by industry best practice. When the selection process involves free and creative choices, rights will arise in those separate creative elements, meaning the choices taken as a whole, rather than in the individual digitised models. These are more akin to database rights. When the selection process obscures or changes the object's representation during post-production, the result is more likely to be expressive 3D model

			elements that are protected by a new copyright. However, it does not follow that the entire model is protected by a new copyright.
Metadata, *i.e.*, automated data such as paradata or metadata or information added to describe the digitised object	Automated information, factual statements, short phrases, or other basic metadata in a model	More complex, human created data (*e.g.*, unstructured text) that describes the object in more detail, contains opinions or original research	The more automated or basic the metadata, the more likely it is not protected by copyright. The more developed the metadata, the more likely to be protected as a literary work within the metadata.

3. Data on 3D Models and Rights Assessments in Europeana

For this portion of the study, we gathered data up to 9 January 2024 to examine the 3D models in Europeana.eu and rights statements applied. This section discusses the practices and trends emerging among data providers on Europeana.eu. We then use the Scenario tables to analyse rights issues arising (or not) in existing examples from Europeana and other 3D publication platforms based on the information provided by the models' creators.

3.1. Practices and trends among data providers

Europeana.eu showed 4,696 3D models from 53 data providers among 20 countries and one international project.[83] These 3D models range from reproductions of existing cultural heritage objects to born-digital reproductions of archaeological sites. Examples include:

- A Bronze Age Spearhead (Public Domain Mark or PDM) published by The Hunt Museum;
- A 3D digital reconstruction of the town Biłgoraj in the 1910s (CC BY) modelled from a map from the early 20th century and published by Grodzka Gate – NN Theatre;
- A signet ring belonging to Aregund (the earliest known queen of Francia) from 570 A.D. (CC BY-NC-SA) published by Musée d'Archéologie nationale, domaine national de Saint-Germain-en-Laye;
- A 3D sampled point cloud model of the Skellig Michael Monastic Site (CC BY-NC-ND) published by The Discovery Programme; and
- LiDAR scans of houses on Skara Brae (both CC0 and In Copyright) published by Historic Scotland.

Appendix A includes a breakdown of countries, organisations, number of models, and statements used.

In summary:

- **4,366 (or 93%)** of all models are subject to **new copyright claims**
  - 4,162 (or 87%) use closed licences or rights statements that prohibit commercial use and modification
  - 204 (or 4%) use open licences that permit commercial use and modification
- **311 (or 6.7%)** are published as **public domain**
- **19 (or 0.3%)** are published with **limited use permissions** using the label No Copyright - Non-Commercial Use Only

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[83] Appendix A includes a breakdown of countries, organisations, number of models, and statements used.

The **largest contributor of public domain models** is [The Hunt Museum](#) with 143 PDM 3D models. The Hunt Museum also contributes models to Sketchfab under the CC BY and CC0 licences.[84] Models contributed to Europeana as PDM were found on Sketchfab under conflicting CC BY and CC0 statements.[85]
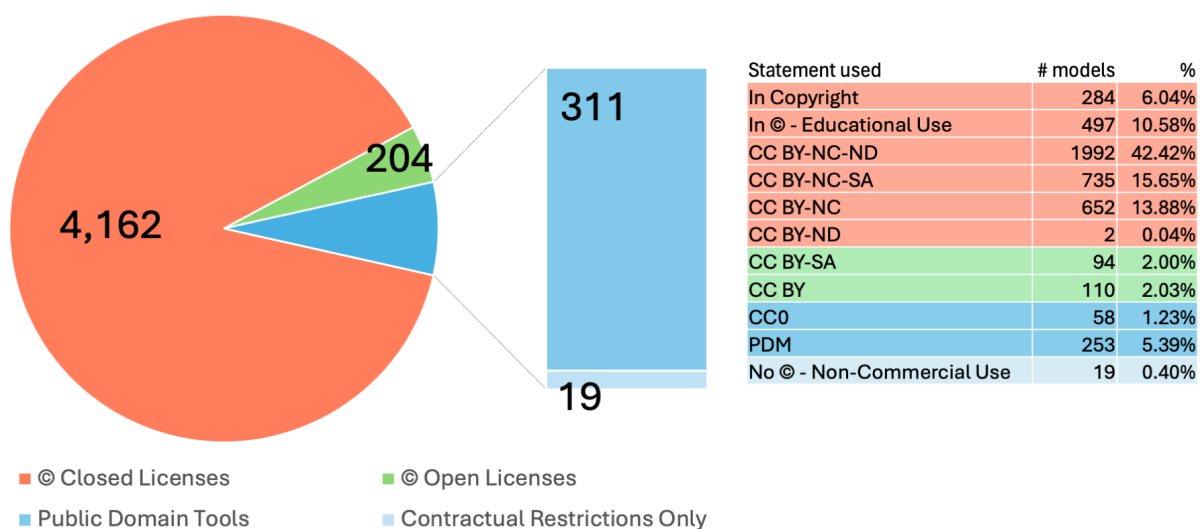
The **largest contributor of models overall** is the [Archaeological Information System of the Czech Republic](#) with 576 CC BY-NC 3D models.

3.1.1.   Distribution of rights statements

In terms of both the number of models and organisations, the rights statement most commonly used is Creative Common's most restrictive licence: 1,992 (or 42%) of models are marked CC BY-NC-ND by 25 organisations. This is followed by 735 (or 16%) models marked CC BY-NC-SA, the second most restrictive CC licence, by 11 organisations. This trend diverges with the third most commonly used statement. With respect to the number of models, 652 (or 14%) models are marked CC BY-NC, the third most restrictive CC licence, by 4 organisations (see Table 3.1.1. below). With respect to the number of organisations, 9 organisations use In Copyright on 284 models.

The prevalence of using the most restrictive licences and statements demonstrates a strong conservative trend among organisations with respect to releasing rights in the bundle of copyright, assuming they are in fact valid.

Figure 1. Distribution of statements applied to 3D models

Statement used	# models	%
In Copyright	284	6.04%
In © - Educational Use	497	10.58%
CC BY-NC-ND	1992	42.42%
CC BY-NC-SA	735	15.65%
CC BY-NC	652	13.88%
CC BY-ND	2	0.04%
CC BY-SA	94	2.00%
CC BY	110	2.03%
CC0	58	1.23%
PDM	253	5.39%
No © - Non-Commercial Use	19	0.40%

■ © Closed Licenses   ■ © Open Licenses
■ Public Domain Tools   ■ Contractual Restrictions Only

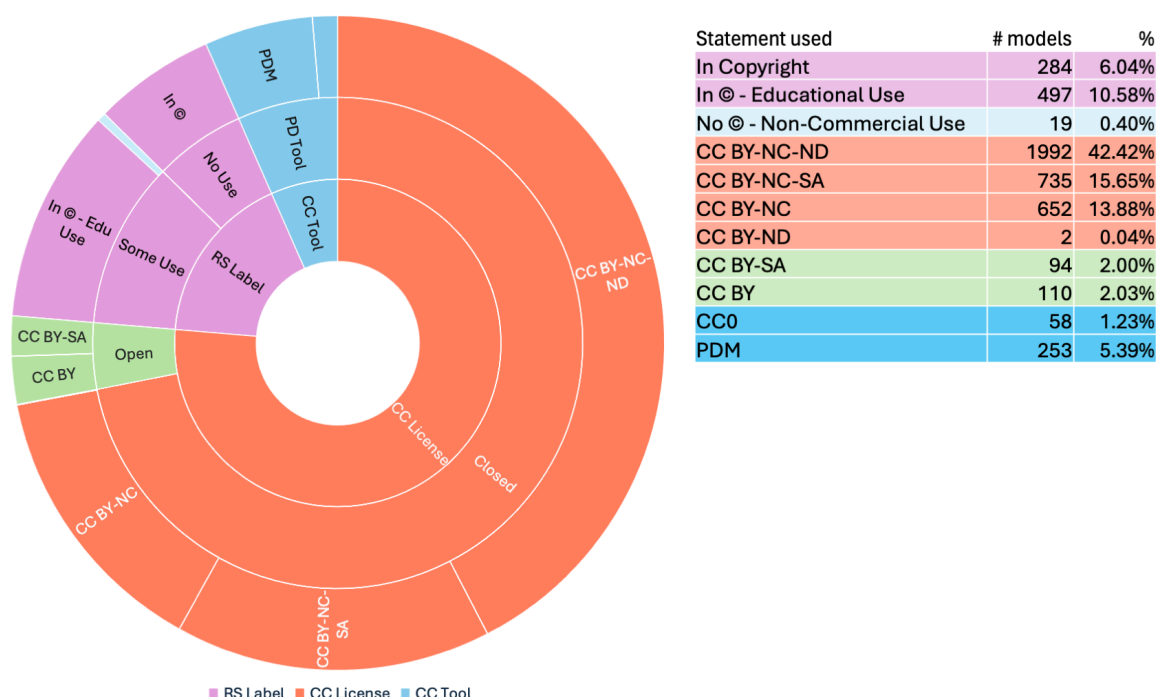[84] At the time of this writing, 358 models are available on The Hunt Museum's [Sketchfab account](#).
[85] For example, compare: (1) the Europeana [Chinese Porcelain Vase](#) Public Domain Mark model to the Sketchfab [Chinese Porcelain Vase](#) CC BY model; and (2) the Europeana Madonna Staff-mount [Public Domain Mark](#) model to the Sketchfab [Madonna Staff-mount](#) CC0 model. It should be noted that Sketchfab has changed its licensing framework, which has introduced inconsistency to how 3D models are marked as public domain.

Lastly, it is important to note that open licences like CC BY and CC BY-SA are still copyright-based statements, which are inaccurately applied where no copyright arises in the 3D model.

In terms of statements applied:

- 3,896 (or 83%) use Creative Commons licences and tools.
- 800 (or 17%) use Rights Statements labels, although these are limited to only three of the twelve labels available.[86]

Figure 2. Distribution of Creative Commons and Rights Statements applied to 3D models

Statement used	# models	%
In Copyright	284	6.04%
In © - Educational Use	497	10.58%
No © - Non-Commercial Use	19	0.40%
CC BY-NC-ND	1992	42.42%
CC BY-NC-SA	735	15.65%
CC BY-NC	652	13.88%
CC BY-ND	2	0.04%
CC BY-SA	94	2.00%
CC BY	110	2.03%
CC0	58	1.23%
PDM	253	5.39%

The table below shows this distribution in more detail, including the number of organisations using each category of rights statement.

Table 3.1.1. Distribution of rights statement, copyright and licence status, # models and # organisations using the statement

Type	Status	Statement	# models	# orgs
Rights Statement Label	All rights reserved	In Copyright	284	9
	Some permissions extended	In Copyright - Educational Use Permitted	497	4
		No Copyright - Non-Commercial Use Permitted	19	2
Creative Commons License	Closed licences	CC BY-NC-ND	1,992	25
		CC BY-NC-SA	735	11
		CC BY-NC	652	4
		CC BY-ND	2	2
	Open licences	CC BY-SA	94	3

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[86] These include: In Copyright, In Copyright - Educational Use Permitted, and No Copyright - Non-Commercial Use Only.
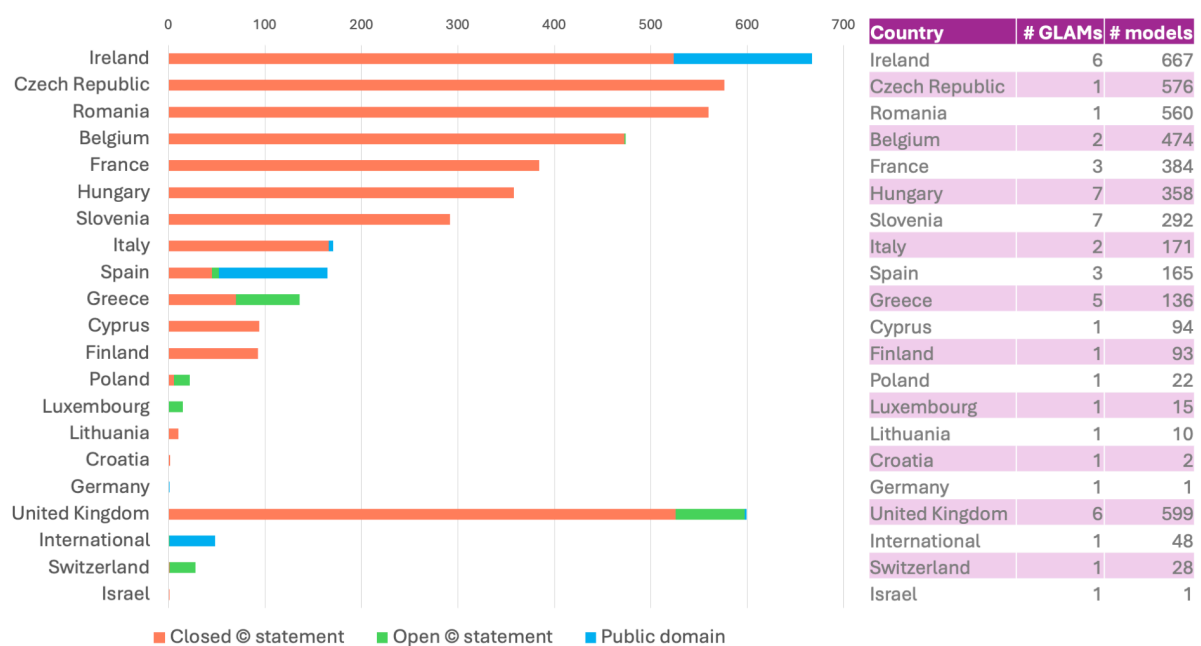
		CC BY	110	7
Creative Commons Tool	Public domain tool	CC0	58	5
		Public Domain Mark	253	4

Some data providers use multiple rights statements, licences and tools across their 3D models. Whether such use is consistent or accurate is discussed in Section 3.1.3.

3.1.2. Representation of data providers

In terms of countries represented, **Ireland** has the highest representation with six data providers contributing a total of 667 3D models.

Figure 3. Representation of countries and organisations contributing to 3D models distributed by rights statements

Country	# GLAMs	# models
Ireland	6	667
Czech Republic	1	576
Romania	1	560
Belgium	2	474
France	3	384
Hungary	7	358
Slovenia	7	292
Italy	2	171
Spain	3	165
Greece	5	136
Cyprus	1	94
Finland	1	93
Poland	1	22
Luxembourg	1	15
Lithuania	1	10
Croatia	1	2
Germany	1	1
United Kingdom	6	599
International	1	48
Switzerland	1	28
Israel	1	1

Given that most data providers are in EU countries, the variation of statements used does not suggest a consistent approach to copyright interpretation is taken among those subject to EU copyright laws. Specific rights issues arising in EU jurisdictions are addressed in Section 3.2, where relevant.

In terms of organisation type, data provider types included a range of organisations. **Other** has the highest representation with 16 organisations, followed by **Museum** with 14 organisations.

Figure 4. Representation of data providers distributed by organisation type
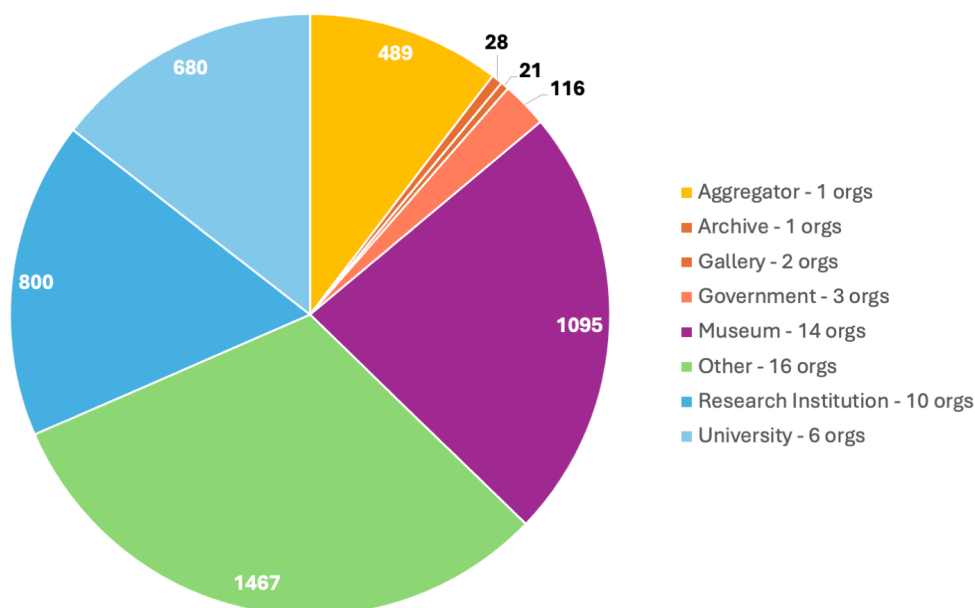
Appendix B includes the distribution of data providers by organisation type.

3.1.3. Accuracy of rights statements

Our attempt to assess the accuracy of rights statements applied to 3D models was made difficult when minimal metadata or paradata accompanied the object. It is also important to note that the analysed 3D models were provided to Europeana.eu in previous years and that Europeana began reviewing its frameworks to better support 3D, including paradata, in September 2022. Even so, trends in practice and the rights statements applied varied significantly across categories of works, reproduction methods and outputs that should produce similar conclusions on rights assessments.

As discussed in the methodology, where a data provider consistently applied one rights statement, we examined a small and diverse sample of models to assess their general accuracy. Where various statements were applied, we took a more in-depth review to understand whether differences in production affected the assignment of the statement and to assess their general accuracy.

This involved reviewing the information made available by data providers, such as the data, metadata, paradata, descriptions on other platforms and other information about the project.

Figure 4. Accuracy of rights statements applied to 3D models
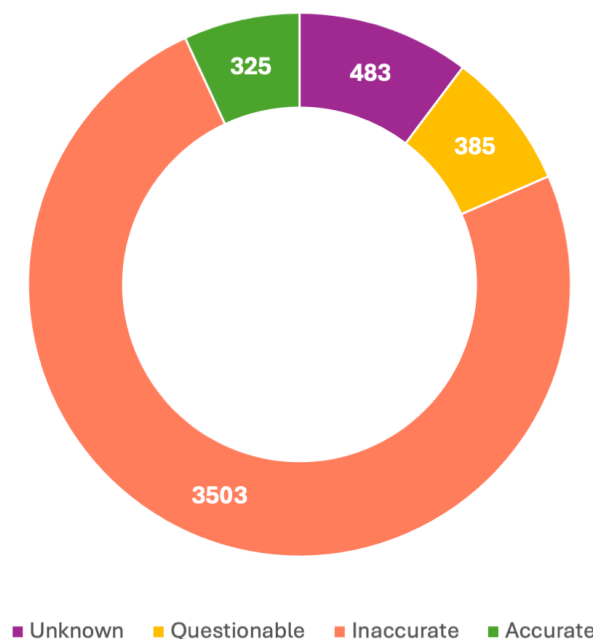
In total, **325 (or 7%) of statements were Accurate**.[87] This included:

- 306 CC0 and PDM models; and
- 19 No Copyright - Non-Commercial Use Only models.

We were unable to identify the total number of accurate in-copyright models due to the minimal information on creative contributions disclosed by data providers and our practical inability to compare the model with the source object to determine whether it was a faithful reproduction or the author's own intellectual creation.

Despite this, we were able to conclude at least **3,503 (or 75%) applied Inaccurate** copyright-based statements. This indicates that most data providers apply copyright by default rather than after an assessment involving a legally informed interpretation of copyright law.

Another **385 (or 8%) were Questionable**, meaning there was reasonable scope for rights to arise based on the information available or due to information missing and necessary to support that conclusion.

Lastly, **483 (or 10%) were Unknown**. This category included: (a) models with broken links; (b) more complex models with insufficient descriptions to confirm the copyright status; and (c) models without preview images that also required the installation of software to open and examine the file.

Among organisations applying a copyright licence, we also observed a distinction between organisations that apply open versus closed licences. Research shows that

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[87] We were unable to examine five of the 311 public domain models due issues with the source web pages linked in Europeana, and therefore categorised these as Unknown.

organisations may apply open licences like CC BY to encourage users to attribute the source, or CC BY-SA to ensure users do not apply additional restrictions to the digitisation even when the model is non-original. Organisations that seek attribution in addition to commercialisation rights or to prevent modification will apply closed licences, like CC BY-ND, CC BY-NC, CC BY-NC-SA or CC BY-NC-ND. However, a copyright-based licence or label cannot be used if no copyright subsists in the digitisation.

To illustrate, the chart below shows the spectrum of Creative Commons licences and tools alongside the Rights Statements labels. Each licence, tool or label is distributed along the 'X' axis to indicate where they fall in terms of sitting on top of a valid copyright or falling within the public domain.

Figure 5. Spectrum of Creative Commons licences and tools and Rights Statements labels
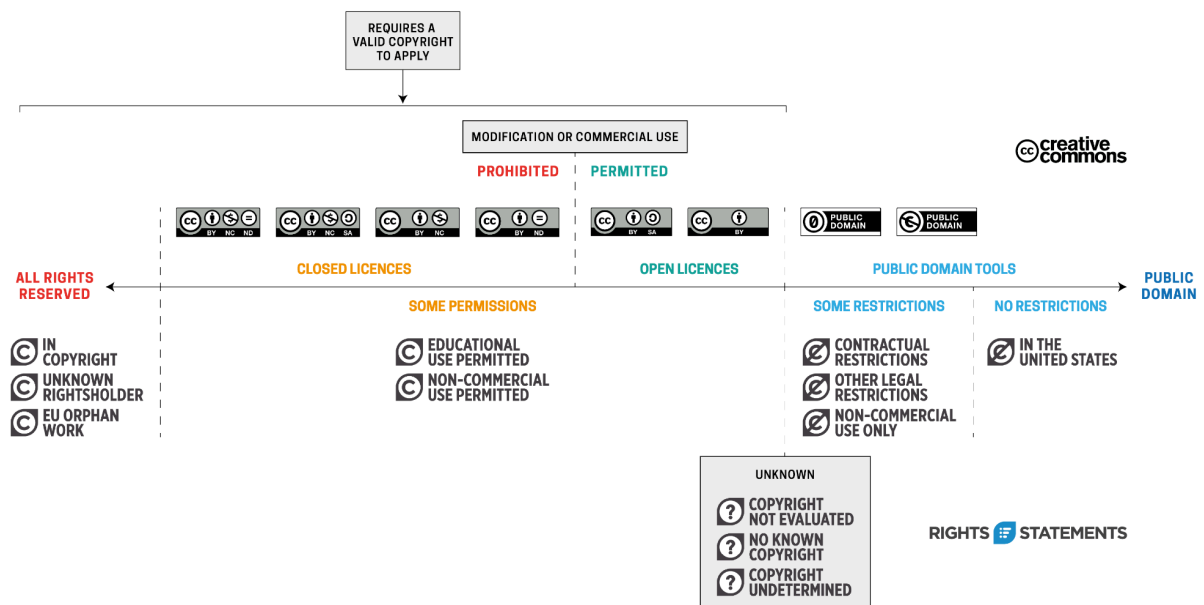
Andrea Wallace, CC BY

As discussed in Section 3.1.1, we examined data providers applying multiple licences, tools and labels to identify whether there were any copyright interpretation trends within a given organisation. No such consistency was discernible.

To illustrate, Visual Dimension BVBA contributes 51 models distributed as: 29 CC BY-NC-SA; 17 No Copyright - Non-Commercial Use Only; 3 CC BY-NC-ND; 1 In Copyright - Educational Use Permitted; and 1 CC BY. Given the use of copyright-free and copyright-based statements, one would expect consistency among the respective assessments and statements applied. However, we assessed the 1 CC BY model of an existing object as Inaccurate and 29 CC BY-NC-SA and 3 CC BY-NC-ND models as Questionable, given that they include architectural renderings and objects constructed from photographs as "virtual reconstructions." For comparison, similar models of both types are found in the 17 No Copyright - Non-Commercial Use Only models. If this latter

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set of models were self-assessed as having no copyright, it would appear that the use of CC licences on the other models of similar making is Inaccurate.

In another example, [The Discovery Programme](#) contributes 419 models, distributed as: 317 CC BY-NC-ND; 92 In Copyright; 8 CC BY-NC; and 2 CC BY-NC-SA. An examination of each licence category reveals certain trends. In Copyright is used for high-resolution [3D point cloud models](#). The 8 CC BY-NC models appear to have all been made by [the same scanner](#). Both CC BY-NC-SA models are of the [same cultural heritage site](#): one is a photo texture and the other a hill-shade texture. It appears that CC BY-NC-ND is used as the default licence for all other models.

Two other contributors with similar approaches are worth noting. First, the [National Research Council of Italy](#) contributes 149 models, distributed as: 99 CC BY-NC-ND; 45 In Copyright; and 5 PDM. This indicates a distinction has been made for the 5 PDM models. However, we were unable to inspect these models. On Europeana, the models are not available to view, nor does the contributor's website load.

Second, a similar comparison of [AD&D 4D Association for 4D Documentation and Dissemination](#) did not reveal any clear trends among the 60 models distributed as: 8 CC0; 6 PDM; 6 In Copyright - Educational Use Permitted; 5 In Copyright; 1 CC BY; 1 CC BY-NC-SA; and 1 CC BY-NC-ND. However, since the initial research was undertaken, statements have either changed or new models have been added. These are now distributed as: 43 CC BY-NC; 27 In Copyright - Educational Use Permitted; 11 CC0; 6 PDM; 5 In Copyright; 2 CC BY; 1 CC BY-NC-ND; 1 CC BY-NC-SA; and 1 CC BY-ND. We also observed some models on Europeana published as CC BY-NC which were available on Sketchfab as CC0.[88]

3.2.   Scenarios to support more accurate rights assessments

In light of the above analysis, Section 3.2 draws from existing 3D models to illustrate how rights assessment can be made more accurate. These models are taken from Europeana.eu and other platforms, such as Sketchfab, Shapeways and institutional websites due to the methods used and issues raised.

We organised the models into five scenarios based on clusters identified during the research. These include:

- Scenario 1: Clear public domain status
- Scenario 2: Less clear copyright status
- Scenario 3: Layers of data with less clear rights status
- Scenario 4: Complex scans or reconstructions
- Scenario 5: Animations, composites, born-digital reconstructions or derivative works

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[88] For example, compare the Europeana [Los Morrones](#) CC BY-NC model to the Sketchfab [Los Morrones](#) CC0 model.

Each model includes information on:

- **3D model**, in the form of screenshots and other images to support the analysis.
- **Object information** about (a) the source object or site, date of creation and copyright status, (b) the 3D model and platform and (c) the data provider, date of creation or publication and rights statement.
- **Analysis** on (a) any object- or jurisdiction-specific issues, (b) how the 3D model was made based on metadata and other information, (c) the accuracy of the rights statement applied and (d) an alternative rights statement, where useful.

As a preliminary matter, most models analysed should not be subject to new copyright protections. In light of this, we attempted to rationalise why, or on what basis, new rights were claimed to then illustrate the more accurate rights statement to apply.[89] As discussed in the methodology, this involved reviewing publicly available information about individual models to determine if they attempted to accurately represent the source object or include additional creative elements based on the data made available by their creators.

We do not claim our analyses are all accurate. However, they are guided by the prevailing copyright laws and any information, descriptions, or metadata published by data providers themselves, whether via Europeana, another platform, or an associated website. Where organisations did not disclose creative contributions or changes to the 3D model, we assumed that reproduction had proceeded under goals to faithfully model the source object and therefore that it was non-original.
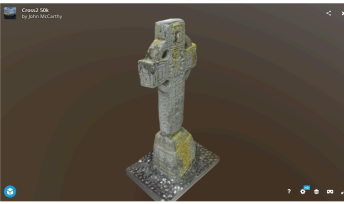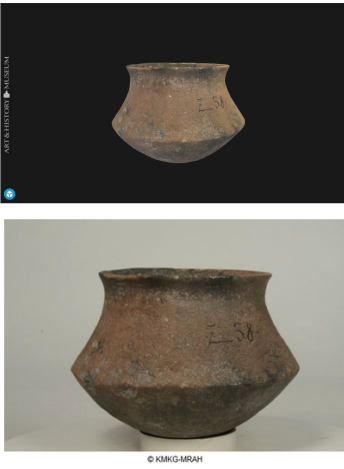
3.2.1. Scenario 1: Clear public domain status

Rights assessments are the most straightforward when a 3D model faithfully reproduces a public domain work. The model will be non-original, but other rights or contractual conditions may restrict reuse.[90] As illustrated below, if copyright restrictions are present, the models are not accurately labelled.

Table 3.2.1. Clear public domain status		
3D model	**Object information**	**Analysis**
	Decorative object, 17th century, public domain Chinese Porcelain Tulip Vase, [Europeana](#) The Hunt Museum (Ireland), 2022, [Public Domain Mark](#)	***Issue:*** None. The decorative object is in the public domain. ***3D model:*** Made using Shining3D's Einscan Pro 2X laser scanner and ExScan Pro software, with Meshlab and Blender for post-processing. ***Outcome: Public Domain Mark is accurate.*** *But see conflicting CC BY licence on* [*Sketchfab*](#)*.*

[89] VIGIE 2020/64, 'Study on quality in 3D digitisation of tangible cultural heritage: mapping parameters, formats, standards, benchmarks, methodologies, and guidelines' (2022), https://digital-strategy.ec.europa.eu/en/library/study-quality-3d-digitisation-tangible-cultural-heritage.

[90] *See, e.g.,* https://weave-culture.eu/wp-content/uploads/2022/11/WEAVE-case-study-daguerreotypes-in-3D.pdf.

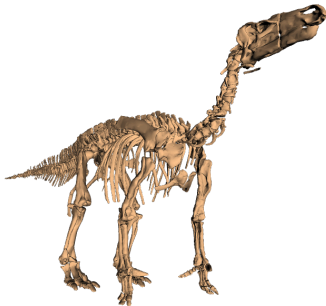|		
	Sculpture, 1920, public domain Anne Marie Carl-Nielsen, Mermaid, Europeana Statens Museum for Kunst (Denmark), 2019, CC0 Twin it!, published January 2024	*Issue:* None. The sculpture is in the public domain. *3D model:* Made by Scan the World using Artec Eva Scanner and Artec Studio software. Post-production includes removing colour from the original sculpture. *Outcome:* **CC0 is accurate.**
	Monumental sculpture, date unknown, public domain Castledermot North Hugh Cross, Europeana Flinders University (Australia, but the object is in Ireland), 2019, In Copyright - Educational Use Permitted	*Issue:* None. The monumental sculpture is in the public domain. *3D model:* Made using photogrammetry, glTF file format. Described as "Early Christian" and "Early Medieval," with conflicting information listing the creation date as 1950. *Outcome:* **Copyright claim appears inaccurate.** No new copyright arises in the 3D model. The more accurate statement is CC0 or Public Domain Mark.
	Functional object, 2200 - 1500 BC, public domain Carinated vase with flaring rim, Europeana Musées Royaux d'Art et d'Historie, Bruxelles (Belgium), 2020, CC BY-NC-SA *Note the 2D digital surrogate of the source object shown beside the model and with a © notice underneath*	*Issue:* None. The vase is in the public domain. *3D model:* Minimal metadata, some post-production additions applied in Sketchfab viewable through model inspection which include improved lighting. *Outcome:* **Copyright claim appears inaccurate.** No new copyright arises in the 3D model, which can also be confirmed by comparing it to the source object. The more accurate statement is CC0 or Public Domain Mark.
	Sculpture,1st century, public domain The Wrestlers Inv. 1914 n.216, Virtual World Heritage Lab Uffizi Gallery (Italy), 2017, All rights reserved	*Issue:* The sculpture is subject to the Italian Cultural Heritage Code. *3D model:* Made using photogrammetry, RealityCapture and Zbrush software as part of a collaboration with Indiana University, subject to a partnership contractual agreement. Model information in Sketchfab does not indicate additions made during post-production. *Outcome:* **Copyright claim appears inaccurate**. The underlying work is subject to the Italian Cultural Heritage Code. The more appropriate statement is either No Copyright - Other Known Legal Restrictions (*i.e.*, cultural heritage code) or No Copyright - Contractual Restrictions (*i.e.*, the agreement restricts third-party use).

	Artefact, 6th century, public domain	Issue: The artefact is both subject to the Italian Cultural Heritage Code and falls outside the customary meaning of "visual art" in a jurisdiction that may recognise related rights.
	subject to the Italian Cultural Heritage Code	
	Head from Manoppello, Europeana	3D model: Made using photogrammetry and 3DF Zephyr software. Some post-production additions applied in Sketchfab, namely the inclusion of annotations to the model.
	Museo Archeologico Nazionale d'Abruzzo (Italy), 2021, CC BY-NC-ND	Outcome: **Copyright claim appears inaccurate.** The underlying work is subject to the Italian Cultural Heritage Code. The 3D model may be subject to related rights recognised in Italian Copyright Law. The more appropriate statement is No Copyright - Other Known Legal Restrictions (*i.e.*, cultural heritage code and protections for "other photographs").

3.2.2. Scenario 2: Less clear copyright status

Rights assessments may be less clear when a 3D model faithfully reproduces a public domain work, yet aspects of the reproduction process require additional input that can be representative, interpretive, or expressive. More technical decisions leading to representative models will not attract protection. More interpretive or expressive models can attract copyright if decisions are sufficiently creative and the work is imprinted with the technician's personality.

Table 3.2.2. Less clear copyright status		
3D model	**Object information**	**Analysis**
	Wearable object, *Armor for Man and Horse with Völs-Colonna Arms*, c. 1575. North Italy, 16th century. Steel; The Cleveland Museum of Art, John L. Severance Fund 1964.88, public domain	Issue: Although it is unlikely, copyright could arise in the display arrangement of wearable objects on a 3D surface if a sufficiently creative arrangement results in the reconstruction being the author's own intellectual creation (*e.g.*, a more complex action gesture to resemble battle).
	Armor for Horse and Man, Sketchfab	3D model: Made using photogrammetry by an external partner, minimal metadata, some post-production additions applied in Sketchfab namely Physically Based Rendering.
	Cleveland Museum of Art (United States), 2022, CC0	Outcome: **CC0 is accurate.**
	Wearable object, Georgian suit coat, waistcoat and breeches, 1760 to 1770, public domain	Issue: Although it is unlikely, copyright could arise in the display arrangement of wearable objects on a 3D surface if a sufficiently creative arrangement results in the reconstruction being the author's own intellectual creation (*e.g.*, a more complex or figurative pose).
	Georgian suit, waistcoat and breeches, Sketchfab	3D model: Made using photogrammetry and produced in Agisoft Metashape from 332 images, taken using a Canon R5 with RF 50mm F1.2 lens. Digitisation by University of Exeter Digital Humanities Lab.
	Royal Albert Memorial Museum & Art Gallery (United Kingdom), 2024, CC0	

		Outcome: **CC0 is accurate.**
	Wearable object, Ceremonial headband with anthropomorphic pendants, AD 1000-1476 (Chancay culture), Peru, public domain Ceremonial headband with two pendants, [Sketchfab](#) Archaeological Museum in Kraków, Virtual Museums of Małopolska (Poland), 2020, [CC0](#)	*Issue:* Although it is unlikely, copyright could arise in the display arrangement of movable objects on a surface if a sufficiently creative arrangement results in the outcome being the author's own intellectual creation (*e.g.*, an arrangement that involves other objects, surfaces, and design elements). *3D model:* Minimal metadata, some post-production additions applied in Sketchfab including edits to the background and improving the lighting to certain parts of the model. *Outcome:* **CC0 is accurate.** *But see conflicting statements on other materials:* "Over 80 per cent of the creative content available here is in the public domain and is licensed under a CC BY." [Website](#)
	Scientific model, Tellurium with Lunarium, 1903, public domain Tellurium with Lunarium, [Europeana](#) ETH Library (Switzerland), 2023, [CC BY-SA](#)	*Issue:* Although it is unlikely, copyright could arise in the display arrangement of the 3D movable objects if a sufficiently creative arrangement results in the outcome being the author's own intellectual creation (*e.g.*, positioning the planets to one's birth chart and taking a 2D photograph from a specific angle). Here, the arrangements are largely dictated by the technical limitations of the model. In this case, however, the 3D model is subject to rights recognised in Swiss Copyright Law. *3D model:* Made using photogrammetry with Agisoft Metashape, Cinema 4D and 3D-Coat. Other details include use of a white screen background, tripod-based camera and lighting, manual measurement of key points or areas of object and other edits made using Sketchfab. *Outcome:* **Copyright claim is accurate.** The tellurium has been arranged for functional purposes and scanned in 3D in its entirety. Swiss law recognises copyright in photographs depicting physical 3D objects produced by means similar to photography and by human beings irrespective of individual character, as well as related rights in photographs without individual character.
	Fossilised skeleton, 130 million years ago, found in the 19th century, copyright status unclear Holotype of Iguanodon bernissartensis, [Europeana](#) Royal Belgian Institute of Natural Sciences (Belgium), March 2021 - July 2023, [CC BY-ND](#) Twin it!, published January 2024	*Issue:* Although it is unlikely, copyright could arise in the scientific arrangement of the bones as a derivative work if sufficiently creative interpretations are required and result in the reconstruction being the author's own intellectual creation. *3D model:* Made by digitising individual bones with photogrammetry and 3D scanning techniques, including Artec Eva, Artec Spider, HDI FlexScan (*see* [Iguanodon scanning video](#)) and Artec Studio software, with the full reconstruction completed during post production to enable user interactivity when clicking on the individual bones (*see* [Natural

	Image of source object shown for comparison to the 3D model	Sciences website). ***Outcome: Copyright claim may be accurate.*** New rights may arise in both the underlying reconstruction and in the model, as well as in the interactive version. However, if the reconstruction of the skeleton is informed by scientific information to accurately reproduce the dinosaur's skeleton as it would have been, the decisions are functional and the work will not be the author's own intellectual creation.

3.2.3.   Scenario 3: Layers of data with less clear rights status

Rights assessments may be more complicated when a representative or non-original model incorporates a new layer of data or other features that are interpretive or expressive. Even if rights arise, multiple versions of the model can be published to ensure the non-original data is available for unrestricted reuse, while the version with original contributions is published in a way that allows the viewer to understand the data and what exactly has been modified.
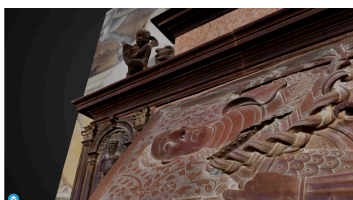
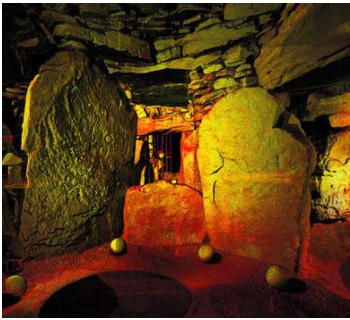| Table 3.2.3. Layers of rights		
3D Model	**Object information**	**Analysis**
	Building, Aristavėlė Manor Palace, 18th century, dismantled in 1987 and rebuilt in 2010, public domain Aristavėlės dvaras, Europeana Lietuvos etnografijos muziejus (Lithuania), 2023, Public Domain Mark Twin it!, published February 2024	***Issue:*** None. It is unlikely that any new rights arise in the remodelled building as an architectural work. ***3D model:*** Minimal metadata is provided related to the 3D digitisation. ***Outcome: Public Domain Mark is accurate.*** Any conservation decisions, such as the reconstruction or representative colouring, in both the building and 3D model are unlikely to attract new rights.
	Church pulpit, 1763-1765, public domain Petäjäveden vanhan kirkon saarnastuolin 3D-mallinnus, Europeana Museovirasto (Finland), 2023, CC BY Twin it!, published January 2024	***Issue:*** Although it is unlikely, copyright could arise in the annotations or data contained in the model as literary works. ***3D model:*** Made using photogrammetry (cameras and drones) and laser scanning (Leica RTC360) during field work resulting in over seven thousand photographs and nearly 600 individual laser scans, with 1-5mm precision and checked against georeferenced points in the field. Produced using 3DWin, Leica Cyclone, Leica Register 360, Adobe Lightroom, RealityCapture, and Cloudcompare. Annotations added in Sketchfab. ***Outcome: Copyright claim is inaccurate.*** Annotations are descriptive short phrases and therefore not protected by copyright law. Even if copyright arises, this should not impact copyright in the 3D model, which is non-original. The more accurate statement is

		CC0 or Public Domain Mark.
	Castle, Sierra de Irta, public domain Castillo Alcalá de Xivert, Castellón, España, Europeana AD&D 4D Asociación para la Documentación y Divulgación 4D (Spain), 2019, CC BY	***Issue:*** Although it is unlikely, copyright could arise in the annotations, any potential colouring, or other interpretive aspects in the archaeological site, such as reconstructions of certain structures, if damaged. ***3D model:*** Geodetic reference system ETRS089, UTM-31 projection, with orthometric altitudes referring to the average sea level of Alicante and Geoid model EGM08 with levelling correction. Some post-production editing and annotations added in Sketchfab. ***Outcome:* Copyright claim is inaccurate.** Annotations are descriptive short phrases, non-original detail images, and other information not protected by copyright law. No creative interpretations are evident in the model to justify a copyright statement. The more accurate statement is CC0 or Public Domain Mark. If municipal or other property-based restrictions apply, these are not disclosed in the data, nor is the correct rights statement applied (*i.e.*, No Copyright - Other Known Legal Restrictions)
	Sculpture, Bust of Nefertiti, 1340 BC, public domain Ägyptisches Museum und Papyrussammlung, Staatliche Museen zu Berlin – Preußischer Kulturbesitz (Germany), 2008, CC BY-NC-SA Published by Cosmo Wenman on Sketchfab and Thingiverse *See the museum's account for more information*	***Issue:*** None. The bust is in the public domain. In 2008 when the bust was made, Article 72 of German Copyright Law recognised related rights protections for technical outputs produced by photographic processes. This provision has since been revised and made retroactive such that related rights are no longer recognised in such reproductions. ***3D model:*** Made using Structured-Light 3D Scanner to create 6.4 million-triangle 3D scan initially to create replica busts. Some post production additions applied, including the imprint of licensing information on the bottom of the 3D model. ***Outcome:* Copyright claim is inaccurate.** The more accurate statement is CC0 or Public Domain Mark.
	Sculpture, Bust of Nefertiti, 1340 BC, public domain What is the genuine Nefertiti?, Sketchfab AD&D 4D Asociación para la Documentación y Divulgación 4D (Spain), 2016-2019, CC BY	***Issue:*** In theory, none. The bust is in the public domain, the Nefertiti Hack data is published CC0 and, as analysed above, the museum's 2008 model is in the public domain. It appears that rights are claimed in the alleged "creative arrangement" of these models via a new composite model that compares the two. ***3D model:*** Unclear, aside from use of Blender. ***Outcome:* Copyright claim is inaccurate.** The combination of two non-original models is insufficient to attract new rights. The more accurate statement is CC0 or Public Domain Mark.

3D Model	Object information	Analysis
	Remix of Nefertiti data published CC0 as part of the Nefertiti Hack Nefertiti Realistic, Mislav Krsto, Sketchfab, Artstation, 2021, *See other remix examples on Sketchfab*	**Issue:** Whether copyright arises in the modification of the facial features and expressive colouring added to the 3D model. **3D model:** Made using a mix of softwares: sculpted in Zbrush, coloured in Substance 3D Painter, re-meshed in Blender and rendered in Blender Eevee. **Outcome: Copyright claim is accurate.**

3.2.4. Scenario 4: Complex scans or reconstructions

Similar to Scenario 3, rights assessments may be more complicated with complex scans and workflow processes or with complex reconstructions that incorporate interpretive or expressive inputs.

Table 3.2.4. Complex scans or reconstructions

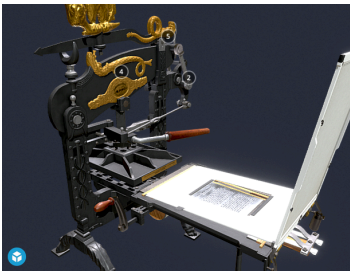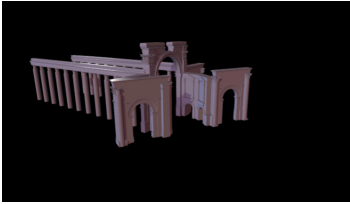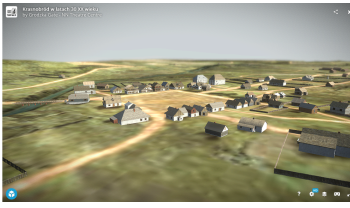| 3D Model	Object information	Analysis
	Room interior, Tombstone of Krzysztof Szydłowiecki, The Grand Chancellor of the Crown with a bas-relief of the so called "Lament Opatowski," 1533-1541, public domain Nagrobek Krzysztofa Szydłowieckiego, Europeana Narodowy Instytut Dziedzictwa (Poland), 2024, CC BY-NC-ND Twin it!, published January 2024	**Issue:** In theory, none. No rights apply to the tombstone, which is however located inside a church and could involve contract-based restrictions. **3D model:** Limited descriptions show the model was made using close range photogrammetry, some post-production additions applied in Sketchfab including edits to the background and improving the lighting to certain parts of the model. **Outcome: Copyright claim is inaccurate.** The more accurate statement is CC0 or Public Domain Mark unless an agreement restricts third-party use. In that case, No Copyright - Contractual Restrictions should be applied.
	Building, St Elizabeth Church in Wrocław, public domain Hochschule Mainz, Europeana St Elizabeth Church in Wroclaw (Poland), 2018, CC0	**Issue:** Whether the reproduction is sufficiently original to attract a new copyright. **3D model:** Made using polygonal modelling, made in Sketchup for visualisation purposes with some post-production in Sketchfab namely adjusting the colour of the model. **Outcome: CC0 is accurate.**
	Building, National and University Library, built between 1936 and 1941, designed by the architect Jože Plečnik National and University Library, Ljubljana, Europeana Slovenian National Library (Slovenia), 2024, Public Domain Mark	**Issue:** Whether the building is protected by copyright as an architectural work and the term of copyright applies (and/or whether a national freedom of panorama exception applies to digitisation). **3D model:** Minimal to non-existent metadata related to 3D digitisation processes, but potentially by drone. **Outcome: Public Domain Mark is accurate.**

	Twin it!, published January 2024	
	Ship, built in 1898 by Scott & Sons of Bowling SY Carola (point cloud), Sketchfab Scottish Maritime Museum (United Kingdom), 2019-2020, CC0	***Issue:*** None. ***3D model:*** Made using terrestrial laser scanning (80 individual high-resolution scans were generated using proprietary software). Scans were then moved over to RealityCapture and saved as a point cloud. ***Outcome:* CC0 is accurate.**
	Monument, Cairn T in Loughcrew, 3000 BC, public domain Cairn T, Loughcrew (High resolution 3D point cloud model), Europeana Archaeology Survey of Ireland, Department of the Arts, heritage and the Gaeltacht (Ireland), 2015, In Copyright	***Issue:*** In theory, none. No rights apply to the objects captured, which is however located on an architectural site and could involve contract-based restrictions. ***3D model:*** Appears to have been made using the Artec EVA scanner, with post-processing in Artec Studio 9 software. individual scans are edited and aligned before a final surface is generated using global registration, fusion, and a small objects filter algorithm. Taken from the point cloud model information available online. ***Outcome:* Copyright claim appears to be inaccurate.** The more accurate statement is CC0 or Public Domain Mark.
	Cittadella, Gozo, Europeana Heritage Malta (Malta), 2022, CC BY-SA Twin it!, published January 2024	***Issue:*** In theory, none. No rights apply to the structures captured, which is however located on an architectural site and could involve contract-based restrictions. ***3D model:*** Limited descriptions indicate the model was made using aerial photogrammetry of a 18km2 area, according to this report. ***Outcome:* Copyright claim appears to be inaccurate.** The more accurate statement is CC0 or Public Domain Mark.

3.2.5.   Scenario 5: Animations, composites, born-digital reconstructions or derivative works

Rights are most likely to arise when a model is converted to an animation, involves composite (and potentially in-copyright) input models or datasets, or is a born-digital reconstruction or derivative 3D model. It should be noted that:

- When a 3D model is used for an interactive or immersive application, such as a video game, animation, or other new resources, any new rights arising in these will not impact the non-original source 3D model.
- Composites may involve rights-protected datasets or other source materials, but those rights do not necessarily transfer to the model, particularly where the modelling process transforms, modifies, removes, or obstructs the elements protected in those works.

Table 3.2.5. Animations, composites or born-digital reconstructions or derivative works

3D Model	Object information	Analysis
	Columbian Press No 3180, Sketchfab Model by arboo, 2018, CC BY *Visit the source to view the animation*	*Issue:* While animations are beyond the scope of this report, they illustrate the range of creative decisions that can lead to a valid copyright in the animation file. However, this file is separate to the non-original model file which should be published according to its non-original status. *3D model:* Unable to assess due to no metadata or descriptions present. *Outcome:* **Copyright claim in the animation is accurate.** Even so, the non-original model can be published CC0 or Public Domain Mark.
	Watchtower, trench & entrance - Aguthi Works Camp, 2019, Sketchfab Museum of British Colonialism and African Digital Heritage (Kenya/United Kingdom), *All rights reserved*	*Issue:* Whether copyright arises in this born-digital reconstruction that involves composite data, scientific and expressive interpretation and other potentially creative decisions and input. *3D model:* Based on archival photography, oral histories, historical photos from JM Kariuki's book *Mau Mau detainee* and the British Pathe video on Aguthi Works Camp. The 3D reconstruction includes the Watchtower, trench and entrance to the Aguthi Works Camp. *Outcome:* **Copyright claim is accurate.**
	Triumphal Arch (with Colonnade), Sketchfab #NEWPALMYRA, 2016, CC BY	*Issue:* In theory, none. However, the Arch no longer exists due to its destruction. *3D model:* Made using process replicating photogrammetry by asking for volunteers to submit their own photographs taken of the structure when standing. The model is 40% complete. It should be noted that users agree to terms when uploading images online stating that unless otherwise specified photos will be publicly available under a CC0 licence. *Outcome:* **Copyright claim appears to be inaccurate.** Despite the structure no longer existing, and therefore this model being a composite model reconstruction and born-digital, the 3D model attempts to faithfully remake the original structure. The more accurate statement is CC0 or Public Domain Mark.
	The town of Krasnobród in the 1930s - 3D digital reconstruction, Europeana Ośrodek "Brama Grodzka - Teatr NN" (Poland), 2015, CC BY	*Issue:* Whether copyright arises in this born-digital reconstruction that involves composite data, scientific and expressive interpretation and other potentially creative decisions and input. *3D model:* Made using pictorial, photographic and technical documentation, including a combination of an inventory of wooden structures with 3D scans of the market square. Research was also conducted in libraries and archives to prepare the virtual model. 3D modelling took place after the reference materials were used to build the

		virtual model. ***Outcome:* Copyright claim appears to be accurate.**
	The Eename Swann Inn - 17th century, Europeana (note that "Eename" is the source spelling) Visual Dimension BVBA (Belgium), 2020, No Copyright - Non-Commercial Use Only	***Issue:*** Whether copyright arises in this born-digital reconstruction that involves composite data, scientific and expressive interpretation and other potentially creative decisions and input. ***3D model:*** Made using the Ename map by Jan Bale (1661), historical documents such as the writings of Abbot de Loose, museum objects and generic information on 17th-century pubs, and using Blender to create the 3D model. The model was created as part of a wider virtual reconstruction process of the Benedictine abbey of Ename. Some objects used in the model originated from the Rijksstudio. ***Outcome:* The "No copyright - Non-Commercial Use Only" label appears to be accurate.** However, use of the model is limited to non-commercial use for reasons that remain unclear. It should be noted that this label can be applied to items that have been digitised as part of a public-private partnership, which could explain its use.
	Necklace, 3different, inspired by Lucas Cranach the Elder's *Melancholy*, 2017, All rights reserved, Shapeways *As part of the collaboration between the National Gallery of Denmark (SMK) and Skapeways on the SMK Jewelry Design Contest* *Melancholy*, 1532, Lucas Cranach the Elder, public domain, Statens Museum for Kunst (Denmark), CC0	***Issue:*** The necklace is a born-digital derivative work based on a public domain artwork, incorporating three geometric shapes from the painting: a sphere, circle and stick. ***3D model:*** The modelling process is unclear. ***Outcome:* Copyright is accurate.**

4. Analysis and Recommendations

Article 14 of the 2019 CDSM Directive follows more than two decades of work at EU levels advocating for the digitisation of cultural heritage while ensuring public domain materials remain in the public domain after digitisation.[91] More recently, EU policymakers set out a comprehensive strategy that accelerates the digital transformation of the cultural heritage sector and creates a common European data space and collaborative cloud for cultural heritage, while reinforcing protections for the public domain and open data commitments.[92] These and other developments require data providers, cultural heritage institutions, private partners, research projects, researchers, members of the public, and anyone else engaged in an act of reproduction to reorient their mindsets around digitisation and to implement new ways of thinking. This final section proceeds with these goals in mind.

4.1. Final analysis and conclusions

Our research shows that 93% of 3D models are subject to new copyright claims, with the most restrictive CC licences used by most data providers and on the majority of models. We concluded that at least 75% of copyright-based statements applied to 3D models were inaccurate. This number includes 204 models subject to the more permissive CC licences qualifying as "open," namely CC BY and CC BY-SA.

This finding correlates to a general misunderstanding of when it is appropriate to apply copyright-based statements to digitisations of public domain works.[93] According to empirical data, at least 1,668 cultural institutions and organisations participate in open

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[91] *See, e.g.,* "[I]t is important to stress the importance of keeping public domain works accessible after a format shift. In other words, works in the public domain should stay there once digitised and made accessible through the internet." Commission Communication of 11 August 2008 Euriope's cultural heritage at the click of a mouse: progress on the digitisation and online accessibility of cultural material and digital preservation across the EU [SEC(08) 2372]; "In order to allow wide access to and use of public domain content, it is necessary to ensure that public domain content remains in the public domain once digitised." Commission Recommendation of 27 October 2011 on the digitisation and online accessibility of cultural material and digital preservation (2011/711/EU), Recital 13. In 2019, the European Commission announced the adoption of two Creative Commons tools for all publications: CC BY 4.0 for all content and CC0 1.0 for all raw data, metadata, and other comparable documents. Commission Decision of 22/02/2019 adopting Creative Commons as an open licence under the European Commission's reuse policy, Arts. 1-2.

[92] Rob Davies, 'Europe's Common Data Space for Cultural Heritage' (*The Heritage Management Organization*, 9 November 2023) <https://heritagemanagement.org/european-data-space/> accessed 10 March 2024.

[93] Wallace, 'Surrogate Intellectual Property Rights in the Cultural Sector' (n 19); Andrea Wallace, 'A Culture of Copyright: A Scoping Study on Open Access to Digital Cultural Heritage Collections in the UK' (Towards a National Collection 2022).

GLAM by publishing some or all digitised public domain collections under open licences or public domain tools.[94] Of these:

- **210 (or 13%)** apply CC0, PDM or similar statements to faithful reproductions of public domain collections as a matter of institutional policy.
- **842 (or 50%)** apply CC0, PDM or similar statements to faithful reproductions on an individual basis as exceptions to institutional policies that claim copyright and reserve all rights.
- **616 (or 37%)** apply CC BY, CC BY-SA or similar copyright-based statements to faithful reproductions, whether as a matter of institutional policy or on an individual basis as exceptions to institutional policies that claim copyright and reserve all rights.

The result is that copyright-based statements are applied in ways that mislead users to believe copyright protects the 3D model, even if it is done unintentionally.

This wider trend is produced by a number of conditions, including:

- Risk averse practices carried over from assessments of in-copyright works in collections and negative obligations restricting use, digitisation and other collections management activities.
- Inadequate knowledge about copyright *and* the public domain that result in copyright assertions in materials that are unprotected by copyright law.
- Tendencies to conflate the manual labour, the expenses involved, and technological skills with the intellectual mental labour and creative input that copyright law rewards.
- Desires to invoke the (potential) commercialisation benefits of copyright law, including the assumption that copyright's exclusive control mechanisms are necessary to realise commercial benefits from the model.
- Institutions or staff that advocate for maintaining the status quo despite legal developments intended to liberate public domain materials for public reuse, including commercial reuse.

For the avoidance of doubt, this is not to say that 3D modelling is not important work worth rewarding. Copyright, however, is not the appropriate system within which to claim such rewards when the model does not meet copyright standards for protection. Indeed, that work is made all the more important when the 3D model is released CC0. Indeed, given our own inability to examine certain models due to broken links, inaccessible formats, and so on, CC0 increases the likelihood of the model circulating and being preserved on other platforms in ways that enable access by a wider public.[95] Moreover, for models published as public domain, users can be asked to follow the Europeana Public Domain Usage Guidelines or Creative Commons Guidelines on the

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[94] Douglas McCarthy and Andrea Wallace, 'Survey of GLAM Open Access Policy and Practice' (*Google Docs*, to present 2018) <http://bit.ly/OpenGLAMsurvey> accessed 4 June 2018.
[95] *See* https://creativecommons.org/2023/02/20/panel-recap-3d-scanning-for-cultural-heritage-preservation-access-and-revitalization/

attribution or public domain materials.[96] Users will be better able to give credit to the models creators where the data provider has included sufficient information in the metadata to enable attribution to the CC0 work.

At the same time, valid reasons may justify restricting use of a 3D model in part or in whole. Our research found that, if arising, these reasons are not adequately reflected in the rights statement applied. Moreover, with respect to sensitive data and heritage, issues arise when copyright-based statements are applied to non-original models given they are not enforceable. Even if copyright is valid, copyright exceptions and limitations will permit some use of the model at national levels.

In cases where copyright assertions are informed by related rights, database rights or intellectual property rights other than copyright, existing licences and labels and description practices are insufficient. While Creative Commons licences are designed to also address this wider range of rights, it seems unlikely that data providers have applied them to communicate that, for example, a more narrow set of related rights apply. Instead, the licence or statement will be assumed to refer to copyright-based rights, rather than other rights that will expire long before any copyright term of protection.

To this point, data providers also do not disclose information on what elements, if any, are protected in the model. Overall, metadata, paradata, and other contextual descriptions were minimal. This raises issues with assessing copyright in a model, in addition to assessing the model's accuracy and the reliability of the data when used for study or other scientific purposes.

Finally, partnership contracts may include terms on copyright ownership among partners. It should be noted that these provisions should not apply to non-original materials produced during a partnership, nor can contractual terms be used to conjure a copyright where one does not exist. It should also be noted that, even if rights arise, contractual terms can ensure any ownership of intellectual property is enjoyed individually by partners, and without restricting them from releasing their own copies under more permissive licences or public domain tools.

4.2. Recommendations

The following recommendations are intended to support the application of more accurate rights statements to the 3D models contributed to Europeana.eu and shared within the data space. These recommendations can be extended to all data space participants.

1. **Assume that no new copyrights arise in 3D digitisations and produce a written statement on copyright originality to support data providers.**

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[96] *See* https://www.europeana.eu/en/rights/public-domain-usage-guidelines and https://creativecommons.org/wp-content/uploads/2024/02/Nudging-Users-to-Reference-Instituti ons-when-Using-Public-Domain-Materials%E2%80%94Creative-Commons-Guidelines-1.pdf.

a. This will enable better informed internal conversations among 3D projects about creativity, originality, copyright, and rights statements.

2. **Produce detailed guidance and support on the application of licences, tools, and labels to 3D models as part of the ELF.**
   a. This will improve the application of accurate rights statements and ensure any valid rights in the model are communicated in ways that enable users to respect them.
   b. This should extend to instructions or checklists on how data contributors can meet the obligations of the respective Rights Statements labels, for example, on disclosing any (justified) contractual terms that restrict reuse as is required by the statement.

3. **Require data providers to submit detailed contextual descriptions on all 3D models (*e.g.*, using EDM fields).**
   a. As a matter of good practice:
      i. The data provider should disclose for example: paradata, including information on reproduction and modelling methods and the software or technologies used; what, if anything, is representative versus creative about the model; what, if anything, has been changed about the work, including descriptive metadata about the source object; etc.
      ii. This disclosure is necessary for data reliability and verification, particularly when 3D models are used for research purposes, as well as to enable Europeana staff to confirm that an accurate rights statement has been applied.
   b. This might involve a questionnaire, the answers to which are included in the metadata, the model's description, or a README file.

4. **Where contributors claim a new copyright:**
   a. **Require a written explanation of the originality of the model, potentially with new EDM fields to document this information.**
      i. This will support more accurate copyright assessments on originality in 3D models, in addition to other items contributed to Europeana.
   b. **Ensure that contributions are not subjected to new rights unless they are sufficiently original.**
      i. This might involve verification by Europeana staff based on the detailed contextual descriptions.
      ii. Where rights do not arise, Europeana can direct data providers to the [Europeana Public Domain Usage Guidelines](#) and [Creative Commons Guidelines](#) on the attribution of public domain materials.
      iii. Data providers should also submit a credit line to Europeana.eu for users to copy and paste the preferred attribution line.

5. **Require non-original input data and processed files to be deposited with a repository and/or to the shared data space.**

a. This will ensure that non-original models and files are made available while the creators enjoy rights in any sufficiently creative derivative models contributed to Europeana.eu.

6. **Introduce a metadata field to indicate when rights, if any, in the model expire.**
   a. This recommendation applies to digitisations of in-copyright works, 3D models that are sufficiently creative.
      i. For in-copyright works, recording when the rights in the underlying work expire could support automatic updates to replace the in-copyright statement with CC0 upon that expiration date.
      ii. For 3D models that are sufficiently creative, data providers could opt-in to a shorter term of copyright, such as 3-5 years, to explore commercial licensing within the window that the model is state of the art. The data provider could select the date at which the model will be dedicated to the public domain, such that others may then use the 3D model.

7. **Consider enabling triaged licences or labels to facilitate rights statements updates upon the expiration of restrictive terms.**
   a. For example, where a 3D model is subject to an exclusive agreement for a limited period, upon its expiration the *No Copyright - Contractual Restrictions* rights statement could be set to update to CC0. This might require recording information such as the year of expiration, per the recommendation above.

If adopted by the Europeana Initiative, the impact of these recommendations will be to inject good practice, standardisation, and levels of harmonisation into the sector from the ground up. The longer term impact will be to support the sharing and reuse of 3D models to the greatest extent possible within the data space, and with Europeana.eu as an important access point for users.

Lastly, Europeana.eu staff should contact data providers to confirm the rights statements of 3D models, test the recommended workflow processes, and correct statements on models that are inaccurately marked. The scenario tables in this report could then be updated to feature examples of good practice that show accurate copyright assessments and rights statements which are supported by the metadata and paradata and incorporated into Europeana.eu guidance for data providers.

5. Appendices

Appendix A. 3D models by country, institution, # models, statement and # applied, and accuracy

#	Country	Institution	# mod	statement & #	Accuracy assessment
1	Belgium	Musées Royaux d'Art et d'Histoire, Bruxelles (Royal Museums of Art and History, Brussels)	423	CC BY-NC-SA	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
2		Visual Dimension BVBA	51	CC BY-NC-SA (29) No © - NC Use (17) CC BY-NC-ND (3) In © - Edu Use (1) CC BY (1)	**Questionable.**
3	Croatia	Marijan Stanisic	2	No © - NC Use	**Accurate.**
4	Cyprus	STARC - The Cyprus Institute	94	In Copyright	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
5	Czech Republic	Archeologický informační systém České republiky (Archaeological Information System of the Czech Republic)	576	CC BY-NC	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
6	Finland	Turun yliopisto (University of Turku)	93	CC BY-NC-SA	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
7	France	Archeovision	108	CC BY-NC-ND	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
8		Centre National de la Recherce Scientifique / Ministère de la Culture et de la Communicaition, Modèles et simulations pour l'Architecture et le Patrimoine (Models and Simulations for Architecture and Heritage)	238	CC BY-NC-ND	**Unknown.**
9		Musée d'Archéologie nationale, domaine national de Saint-Germain-en-Laye (National Archeology Museum, Saint-Germain-en-Laye)	38	CC BY-NC-SA	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
10	Germany	Hochschule Mainz (University of Applied Sciences)	1	CC0	**Accurate.** Primarily faithful 3D models of existing cultural heritage objects.
11	Greece	Ακαδημία Αθηνών (Academy of Athens)	20	CC BY-NC-SA	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
12		Αρχαιολογικό Μουσείο Χανίων (Archaeological Museum of Chania)	6	CC BY-NC-ND	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
13		Δήμος Αρταίων (Municipality of Artaia)	10	CC BY-NC-ND	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
14		Ερευνητικό Κέντρο 'Αθηνά' (Athena Research and Innovation Center)	34	CC BY-NC-ND	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
15		Ινστιτούτο Πληροφορικής - Ίδρυμα Τεχνολογίας και Έρευνας (Institute of Computer Science - Foundation for Research and Technology Hellas)	66	CC BY-SA	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.

16	Hungary	Balatoni Múzeum - Keszthely	143	CC BY-NC-ND	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
17		BAP Macimúzeum és Kiállítóterem (BAP Teddy Bear Museum and Exhibition Hall)	15	CC BY-NC-ND	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
18		Ferenczy Múzeumi Centrum (Ferenczy Museum)	56	CC BY-NC-ND	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
19		Finta Museum - Túrkeve	115	CC BY-NC-ND	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
20		Magyar Nemzeti Galéria (Hungarian National Gallery)	2	CC BY-NC-ND	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
21		Magyar Nemzeti Múzeum - Budapest	14	CC BY-NC-ND	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
22		Ózdi Muzeális Gyűjtemény és Gyártörténeti Emlékpark (Ózd Museum)	13	CC BY-NC-ND	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
23	International	Connected Culture and Natural Heritage in a Northern Environment	48	CC0 (47) CC BY (1)	**Accurate.** Primarily faithful 3D models of existing cultural heritage objects.
24	Ireland	Archaeology Survey of Ireland, Department of the Arts, Heritage and the Gaeltacht	7	CC BY-NC-ND (6) In Copyright (1)	**Questionable.**
25		Dublin Institute for Advanced Studies	96	CC BY-NC-SA	**Unknown.**
26		Flinders University	1	In © - Educational Use	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
27		Hunt Museum	143	Public Domain Mark	**Accurate.** Primarily faithful 3D models of existing cultural heritage objects.
28		Noho Ltd	1	CC BY-ND	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
29		The Discovery Programme	419	CC BY-NC-ND (317) In Copyright (92) CC BY-NC (8) CC BY-NC-SA (2)	**Questionable.**
30	Israel	Hadassah Academic College Jerusalem	1	CC BY-ND	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
31	Italy	Consiglio Nazionale delle Ricerche (National Research Council of Italy)	149	CC BY-NC-ND (99) In Copyright (45) Public Domain Mark (5)	**Unknown.**
32		Museo Archeologico Nazionale d'Abruzzo (Vilnius University Faculty of Communication)	22	CC BY-NC-SA	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
33	Lithuania	Vilniaus universiteto Komunikacijos fakultetas (Vilnius University Faculty of Communication)	10	CC BY-NC-SA	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
34	Luxembourg	Luxembourg Centre for Contemporary and Digital History (C2DH), University of Luxembourg	15	CC BY	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
35	Poland	Grodzka Gate – NN Theatre	22	CC BY (16) In Copyright (6)	**Questionable.**
36	Romania	Universitatea Tehnica din Cluj-Napoca	560	CC BY-NC-ND	**Inaccurate.** Primarily faithful 3D

		(Technical University of Cluj-Napoca)			models of existing cultural heritage objects.
37	Slovenia	Arctur	119	CC BY-NC-ND (115) In Copyright (4)	**Questionable.**
38		Instituto de Arqueología Ibérica, Universidad de Jaén (University Institute for Research in Iberian Archaeology)	38	CC BY-NC (36) CC BY-NC-ND (2)	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
39		LUNIDA	15	CC BY-NC-ND	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
40		Muzej in Galerije Mesta Ljubljane (City Museum of Ljubljana)	27	CC BY-NC-ND	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
41		Narodna galerija Slovenije (National Gallery of Slovenia)	19	CC BY-NC-ND	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
42		Narodni Muzej Slovenije (National Museum of Slovenia)	10	CC BY-NC-ND	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
43		Urbanistični inštitut Republike Slovenije (Urban planning Institute of the Republic of Slovenia)	64	CC BY-NC-ND	**Questionable.**
44	Spain	AD&D 4D Asociación para la Documentación y Divulgación 4D (AD&D 4D Association for 4D Documentation and Dissemination)	60	CC0 (8) Public Domain Mark (6) In © - Edu Use (6) In Copyright (5) CC BY (1) CC BY-NC-SA (1) CC BY-NC-ND (1)	**Questionable.**
45		Agència Catalana del Patrimoni Cultural (Catalan Agency of Cultural Patrimony)	6	CC BY	**Questionable.**
46		Ajuntament de Girona (Girona City Council)	99	Public Domain Mark	**Accurate.**
47	Switzerland	Hochschularchiv der ETH Zürich, ETH-Bibliothek (ETH Zurich University Archives, ETH Library)	28	CC BY-SA (27) CC BY-NC-SA (1)	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
48	United Kingdom	2Culture Associates	1	CC BY-SA	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
49		Archaeology Data Service	489	In © - Edu Use	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
50		CMC - CMC Associates Ltd	28	In Copyright	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
51		Fitzwilliam Museum, University of Cambridge	70	CC BY	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
52		Historic Scotland	10	CC0 (1) In Copyright (9)	**Inaccurate.** Primarily faithful 3D models of existing cultural heritage objects.
53		The Amelia	1	CC0	**Accurate.** Self-assessed as CC0.

Appendix B. Breakdown of organisation type, # models, #orgs and institution name

Type	# models	# orgs	Institution
Aggregator	489	1	Archaeology Data Service
Archive	28	1	ETH Zurich University Archives, ETH Library
Gallery	21	2	Hungarian National Gallery National Gallery of Slovenia
Government	116	3	Archaeology Survey of Ireland, Department of the Arts, Heritage and the Gaeltacht Girona City Council Municipality of Artaia
Museum	1,095	14	Archaeological Museum of Chania Balaton Museum - Keszthely BAP Teddy Bear Museum and Exhibition Hall Ferenczy Museum Finta Museum - Túrkeve Fitzwilliam Museum, University of Cambridge Hunt Museum Magyar Nemzeti Múzeum - Budapest National Archeology Museum, Saint-Germain-en-Laye National Archaeology Museum of Abruzzo National Museum of Slovenia Ózd Museum; City Museum of Ljubljana Royal Museums of Art and History, Brussels
Other	1,467	16	2Culture Associates AD&D 4D Association for 4D Documentation and Dissemination The Amelia Archaeological Information System of the Czech Republic Archeovision Arctur Catalan Agency of Cultural Patrimony CMC - CMC Associates Ltd Connected Culture and Natural Heritage in a Northern Environment The Discovery Programme Grodzka Gate - NN Theatre Historic Scotland LUNIDA Marijan Stanisic Noho Ltd Visual Dimension BVBA
Research Institution	800	10	Academy of Athens Athena Research and Innovation Center Dublin Institute for Advanced Studies Hadassah Academic College Jerusalem Institute of Computer Science - Foundation for Research and Technology Hellas Models and Simulations for Architecture and Heritage National Research Council of Italy STARC - The Cyprus Institute University Institute for Research in Iberian Archaeology Urban planning Institute of the Republic of Slovenia
University	680	6	Flinders University Luxembourg Centre for Contemporary and Digital History (C2DH), University of Luxembourg Technical University of Cluj-Napoca University of Applied Sciences University of Turku Vilnius University Faculty of Communication