

Intellectual Property Rights and Additive Manufacturing



Rosa Maria Ballardini

1 Scope of the Problem

Additive Manufacturing (AM) technology is beginning to become mainstream. As AM continues to develop, the potential implications for society may be radical. Indeed, such disruptions may not only affect technical and business environments but may also have major legal and policy implications. Intellectual property (IP) law, the area of law that aims to protect and promote technological and artistic developments, clearly plays a central role in this context. Scholars have already identified various shortcomings that the IP system might face due to developments in AM. Several analogies have—legitimately—been made with previous disruptions faced by the IP system due to other technological developments linked to digitalisation (e.g. the advent of peer-to-peer file sharing technologies and various developments in software technologies). Even though AM adds to this wave of disruptions, the potential consequences, in terms of IPRs, are much broader. Interestingly, unlike these previous disruptions, which affected segmented areas of IPRs, AM has possible repercussions on all fields of IP, including copyright, patent, trademark and more. This, combined with the speed of development in AM technology, indicates that there is a pressing need for several stakeholders, including industry and businesses, legal practitioners and experts, as well as educators and researchers, to gain a better understanding of what the social impact of AM will be from the viewpoint of IP law. With a focus on European copyright, trademark and patent law, this chapter sheds light over some of the major challenges for the IP system created by the developments of AM technology. The chapter also presents some possible solutions to navigate such problems.

R. M. Ballardini (✉)
Faculty of Law, University of Lapland, Rovaniemi, Finland
e-mail: rosa.ballardini@ulapland.fi

2 General Elements of IP Disruption: The Legal Nature of CAD and the Territoriality of IPRs

IPRs play a crucial role to promote innovation at several stages of the AM developing process. For instance, IPRs are important to protect innovations and creations involved in the development of the printers, as well as the material to be used for printing purposes. As such, IPRs may exist on the AM machines per se, on the methods to build the printers, as well as on the 3D scanning and printing technologies or other computing service related to data processing. This notwithstanding, however, the most controversial aspect involved with IPRs and AM does not lie on the IPRs covering core AM-related technologies, but rather on the IPRs covering products and methods that can be potentially reproduced via AM techniques; the fact that AM enables, for the first time ever, the automated creation of a physical object from a digital file and vice versa is by far the most important element of IPR disruption. On the one hand, the fact that AM enables the digitalisation of physical objects (which can include also protected objects), creates a fertile soil for the growth of new business opportunities. For instance, the digital element of AM easily allows and supports the customisation of products, empowering end users to start from a digital CAD file and tailor it in accordance to their needs and preferences, this way offering consumers the ability to participate in the development of the products. As co-creation and mass-customisation are two key vectors of user innovation (which is, itself, a critical source of radical innovation), it has been forecast that this type of co-creation activities will become much more important in the future (Ballardini et al. 2016, 2017). In addition, AM also enables the growth of AM platforms and intermediaries, connecting them to internet users who can access 3D models, download them, modify them, redistribute them and ultimately print them out as physical objects. As such, AM may trigger developments in the traditional business models used in many manufacturing businesses. These businesses can now capture the advantages linked to the digitalisation of objects and services. On the other hand, however, before this idyllic scenario of prosperity and wealth might be realised, various challenges must be tackled, including issues related to IPRs.

First, a key aspect of AM that needs to be addressed in relation to intellectual property is the type of IPR that can be used to protect CAD files, as well as the relation between the digital representation (i.e. the CAD file) and the physical representation (i.e. the actual object) of a projected item. At the time of writing, no legislature or court in Europe or the USA has yet addressed this question—although some possible alternatives have been sporadically presented and discussed in academic literature. For instance, various scholars have pointed out that, in the view of IP law, CAD files could be considered as software, a database, a work of art, or even something else (Mendis 2013, 2014; Elam 2016). As explained below, in fact, the legal nature of CAD reflects upon whether IPRs can actually be a suitable tool to provide CAD (or the information included in CAD) with adequate protection via exclusive rights. Another important issue to be considered refers to the well-known Achilles' heel of IPRs—their territorial nature. IPRs are only enforceable in the countries in which

they are granted. Therefore, the digital nature of CAD files, coupled with internet access, represents a clear challenge in terms of IP enforcement. Finally, although connected to the previous point, important questions relate to the enforcement and interpretation of the currently-existing doctrines of direct and indirect liability for IP infringement. In this context, an important case of study is the legal position of intermediaries and CAD files repositories.

3 Specific Elements of Disruption: Copyright, Trademarks and Patents

As previously mentioned, an important characteristic of AM is that it might potentially affect doctrines and principles in all areas of intellectual property. As a result, the implications of AM might affect various stakeholders operating in the fields of arts and technologies. For this reason, it is important to shed some light over the key elements of disruption that AM might bring into some key fields of IPRs (Table 1).

Table 1 Summary of major types of IPRs

Type	Subject matter and purpose
Copyright	Right related to original/creative works, including literary, dramatic, musical, artistic works (including software). Right lies in the expression of an idea rather than its general concept or character
Trademark	Right to exclusive use of any sign capable of distinguishing (e.g. words, letters, numerals, pictures, shapes, colours, sounds, smells, etc.) by which consumers can identify the source of goods or services
Patents	Right to exclude others from practicing inventions that are novel, inventive and industrially applicable in exchange for disclosing the invention
Industrial designs	Right to the original, ornamental and non-functional feature (i.e. the appearance) of the whole or part of an industrial or handcrafted product resulting from the features in the lines, contours, colours, shape, texture, and/or materials used
Utility model	Right of protection for certain inventions that are technically less complex inventions or for inventions that have a short commercial life and normally do not meet the patentability criteria
Geographical indications	Rights to signs used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin

3.1 *CAD Copyright and Infringement Standards in Additive Manufacturing*

At European level, copyright law is regulated by EU law via several sectorial Directives, one comprehensive directive and a great amount of case law from the Court of Justice of the European Union (the CJEU) and by national law (Refer to EU Copyright legislation at: <https://ec.europa.eu/digital-single-market/en/eu-copyright-legislation>). Generally speaking, copyright protection attaches automatically as soon as an ‘original’ ‘work’ (including literary, artistic, musical and pictorial works) is created (Refer to Articles 1 and 2 of the Berne Convention for the Protection of Literary and Artistic Works (Berne, September 19, 1886) 828 U.N.T.S. 221, S. Treaty Doc. No. 99–27, 99th Cong. (1986), *as revised* at Paris, July 24, 1979 (Paris Act) and *amended* on September 28, 1979). The requirement of ‘originality’, which is a *conditio sine qua non* for protection, has been extensively interpreted by the European copyright jurisprudence. Under current rules, it is conceived that a work is original if (1) it has been independently created (i.e. it has not been copied), and (2) it meets the requested threshold of ‘creativity’ (the threshold of originality).

In addition, it should be pointed out that a basic principle of copyright law is that protection only extends to the expression of ideas and not to ideas per se (the so-called ‘idea-expression dichotomy’). Accordingly, useful, functional and technical objects do not fall in the domain of copyright (Refer to, for example, Case C-604/10 *Football Dataco and Others*, published in the electronic Reports of Cases, para 39: ‘By contrast, that criterion is not satisfied when the setting up of the database is dictated by technical considerations, rules or constraints which leave no room for creative freedom ...’). Finally, copyright grants the right holder a set of exclusive moral rights (e.g. the rights to paternity and integrity) and economic rights (e.g. the rights to reproduction, distribution, adaptation and making available to the public). The first open question in terms of applying copyright law to the field of AM relates to whether, and to what extent, CAD files are copyrightable. This question boils down to two main issues, first, the issue about the legal nature of CAD, as earlier mentioned (i.e. is a CAD file software, a database, a work of art or something else entirely in the eyes of the law?) and, second, the issue of originality (i.e. under what condition can a CAD file meet the requirement of originality in copyright law?).

Addressing the first point is important to correctly identify the applicable law. Under EU copyright law, different set of rules might apply depending on what type of work we are discussing (e.g. in terms copyright ownership, exceptions and limitations to the right, and exhaustion of the right). For example, if a CAD file qualified as ‘software’, the Software Copyright Directive (Directive 2009/24/EC on the legal protection of computer programs, OJ L 111, 5 May 2009) would come into play; while, if a CAD file was to be a ‘database’, it would be the role of the Database Directive (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.); and, should CAD be considered as a general ‘work of art’, the InfoSoc Directive (Directive 2001/29/EC on the harmonisation of certain aspects of copyright and related rights in

the information society, OJ L 167, 22 May 2001, p. 10) should apply. On the second point, the controversy is threefold. First, an interesting question relates to whether, and under what conditions, a CAD file that is based on an already existing protected object can attract a separate copyright right. Should the CAD file be considered an exact digital replica (or a ‘substantially’ similar one) of a copyright-protected physical object, it would be quite uncontroversial to say that this would be a reproduction (and thus an infringement on the pre-existing copyright right in the physical object) for the purposes of copyright law (*Refer to* Art. 17(3) of the UK Copyright, Designs and Patents Act 1988.) But to what extent and under what conditions can a CAD file be considered as not being ‘substantially’ identical to the protected physical item it represents, as well as constituting its author’s own intellectual creation (*Refer to* e.g. Case C-5/08 *Infopaq International* [2009] ECR, I-06569, Case C-393/09 *Bezpečnostní softwarová asociace* [2010] ECR, I-13971 (*BSA*), Joined Cases C-403/08 and C-429/08 *Football Association Premier League and Others* [2011] ECR, I-09083 (*FAPL*), Case C-145/10 *Painer* [2011] ECR, I-12533, Case C-604/10 *Football Dataco and Others*, published in the electronic Reports of Cases, Case C-406/10 *SAS Institute Inc. v. World Programming Ltd*, published in the electronic Reports of Cases (*SAS*)), and thus potentially attract a separate copyright? Moreover, if the physical object is not protected by copyright (for instance, because it is not original, is utilitarian or functional, or even because it is in the public domain as the copyright has already expired), to what extent can the CAD file of such an uncopyrighted item attract copyright protection? Finally, in the case where the CAD file is created from the scratch, is it possible to claim copyright protection in the CAD file if it represents an uncopyrightable physical item or if the physical items it represents contains both protectable and non-protectable elements? Should the CAD file be treated differently in terms of IP protection from its physical counterpart, would this lead to highly complex situations (e.g. in terms of licensing rights)? To date, these are all open questions.

Last but not least, AM technology also imposes challenges on the enforcement side of the pre-existing IP rights. Especially challenging might be enforcement for direct infringement due to the difficulties and costs of enforcing rights in the digital and global framework. The digital element of AM allows the global sharing of the digital representation of protected items, as well as the printing of the represented object in any location where there is a printer and printing materials. This makes it challenging to track down every single direct infringer. Moreover, many of these types of infringement activities are likely to be pursued by private users, thus falling under the domain of exceptions and limitations to copyright rights. Indeed, as usually occurs in these types of scenarios, this might lead to increased efforts from IP holders towards enforcing against acts of indirect infringement and secondary liability, for instance, by bringing claims against search engines, CAD file sharing services and platforms and Additive Manufacturing shops that may be considered liable for facilitating infringement.

3.2 *Trademark Protection, Functions and Infringement with Additive Manufacturing*

European trademark law is a well-harmonised framework that builds around two main pieces of EU law— the EU Trademark Directive (the TMD) (Directive (EU) 2015/2436 of the European Parliament and of the council of 16 December 2015 to approximate the laws of the Member States relating to trade marks, OJ L 336, 23 December 2015 (TMD), which approximates the trademark laws of the EU Member States, and the EU Trademark Regulation (the EUTMR) (Regulation (EC) No 207/2009 of 26 February 2009 on the European Union trade mark, OJ L 78, 24 March 2009), which establishes a Union-wide trademark title and directly applicable legal rules. In addition, there is abundant jurisprudence stemming from the CJEU interpreting EU trademark laws.

Trademarks protect ‘signs’ (as interpreted broadly and encompassing words, letters and numerals, as well as colours, shapes, designs, or packaging of goods) that are ‘capable of distinguishing’ (i.e. capable of distinguishing the goods or services of one undertaking from those of other undertakings—refer to TMD Art. 3(b) and EUTMR Art. 4 and TMD Art. 4(1)(c) and EUTMR Art. 7(1)(c). Previously, it was also required for the sign to be capable of graphical representation. However, the graphical representation requirement has lately been abandoned (See Regulation (EU) 2015/2424 of the European Parliament and of the Council of 16 December 2015 amending Council Regulation (EC) No 207/2009 on the Community trade mark and Commission Regulation (EC) No 2868/95 implementing Council Regulation (EC) No 40/94 on the Community trade mark, and repealing Commission Regulation (EC) No 2869/95 on the fees payable to the Office for Harmonization in the Internal Market (Trade Marks and Designs). Trademark rights empower the IP holder with the exclusive right to use the mark in the course of trade, as well as to forbid others to use identical or similar confusing marks. ‘In the course of trade’ means in the context of commercial activities with a view to economic advantage and not as a private matter. (See Case C-206/01 *Arsenal Football v. Matthew Reed* [2002] ECR, I-10273, para. 40; Case C-48/05 *Adam Opel AG v. Autec AG* [2007] ECR, I-01017; Case C-17/06 *Celine* [2007] ECR, I-07041; Joined Cases C-236/08–C-238/08 *Google France SARL v. Louis Vuitton Malletier SA* [2010] ECR, I-02417, paras 50–52 on the use of a trademark for keyword advertising; and Case C-323/09 *Interflora Inc v. Marks & Spencer plc* [2011] ECR, I-08625).

In terms of trademark protection and AM, one initial issue relates to the possible trademark protection of the CAD files (Ballardini et al. 2016). Indeed, with AM, it is possible that where a company already holds trademarks on the physical products, protection should be extended to different trademark categories such as computer files and computerised programs (See Nice Classification (trademarks), Goods, Class 090342–090372). Extending trademark protection to other categories might be especially important at the present time because as explained earlier, the legal nature of CAD files remains an open question. On the infringement side, the main issues that arise with AM and trademarks relate to the scope of protection and

the infringement standards. As with copyright, a key issue is to what extent potentially infringing activities, such as the use of a trademark, can be considered as done for private, as opposed to commercial purposes. When addressing this question in the trademark field, we should distinguish between infringing activities related to the use of a trademark on AM product per se and the use of a trademark in relation to a CAD file—the latter embedding the most interesting, yet most controversial, aspects. In fact, it is relatively uncontroversial that replicating an object that embeds a trademark, or the shape of which is itself a trademark (3D trademark), in the course of trade is an infringement (Refer to Article 5(1)(a)(b)(c) of the TMD.), regardless of the type of manufacturing technique used (whether it is AM or something else). On the other hand, however, the use of a trademark in relation to a CAD file might raise more challenges. For example, can we argue that the use of a trademark in a CAD file can be considered use ‘in relation to goods or services’, and thus possibly constitute infringement? (Refer to TMD Art. 10(2) and EUTMR Art. 9(2).) Moreover, can we consider CAD files, and services related to them, as identical or similar to the goods and services for which the trademark is registered? Another question, then, relates to whether such use ‘affects or is liable to affect’ the trademark functions (in particular, the origin function). (See Art. 10(2)(c) of the TMD. See also Case C-206/01 *Arsenal Football v. Matthew Reed*, *supra* n. 33, para. 51; Case C-245/02 *Anheuser-Busch* [2004] ECR I-10989, para. 59) Should it be decided that CAD files are software that enable printing of the trademarked object they represent, as opposed to the digital representation or copy of the trademark itself, the answer might be negative (Refer to Ammar and Craufurd Smith (2015) and also Norrgård et al. (2017). Finally, as for any other IPRs, the digital element of AM poses challenges in terms of enforcement (e.g. border control and customs notices might become inefficient measures against importation of counterfeit products if AM leads to a reshoring of manufacturing) and highlights the position of the intermediaries, especially in the context of contributory infringement and secondary liability (Silverman 2016).

3.3 Patentability of CAD and Patent Enforcement Challenges

Currently, the European patent law system functions as a mix between national and regional entities. At regional level, the most important framework in patent law is the one of the European Patent Office (the EPO), which was established by the European Patent Convention (the EPC) (Refer to Convention on the Grant of European Patents of 5 October 1973 (European Patent Convention, EPC). On the one hand, the major achievement of the EPC and the EPO has been substantively harmonising the procedural and pre-grant patent laws of the signatory Member States. On the other, however, the main downside of the EPC is that it does not provide any post-grant harmonisation. Several efforts have been put forth since the 1950s towards the creation of a harmonised system at the post-grant and litigation phases. For instance, one of the major achievements has been the so-called Community Patent Convention (the CPC) that, even though it never entered into force, provided

some concrete tools that allowed the approximation of European patent laws post-grant (Refer to Convention for the European patent for the common market, [1976] OJ L 17/1—Community Patent Convention, CPC). Ultimately, efforts towards this direction might concretise in the ongoing ‘EU Patent Package’ project, a project that aims at creating a new unitary patent (UP) and a unified patent court (UPC) within the EU (Refer to Agreement of a Unified Patent Court, [2013] C 175/1 (UPC Agreement), Regulation (EU) No 1257/2012 of the European Parliament and of the Council of 17 December 2012 implementing enhanced cooperation in the area of the creation of unitary patent protection and Council regulation (EU) No 1260/2012 of 17 December 2012 implementing enhanced cooperation in the area of the creation of unitary patent protection with regard to the applicable translation arrangements). However, under current rules litigation still remains the domain of national law.

According to the EPC, patents are granted for inventions that are new, involve an inventive step, are capable of industrial application and are sufficiently disclosed (Refer to EPC Article 52 and 56). In terms of infringement, both the CPC and the UPC contemplate two types of infringement activities— direct infringement (giving raise to ‘strict’ liability as to forbid others to make, use, sell, offer to sell, or import the patented invention) and indirect patent infringement (giving raise to secondary types of liability against those who supply or offer to supply third parties with means to achieving an essential element of the invention, having the knowledge that such means will be used in an infringing product or method) (Refer to Article 25 and 26 of the UPC Agreement.). At the pre-grant stage, the major controversies that AM might create refer to the protection of CAD files via patent law, as well as issues related to ethics and morality when bioprinting comes into play. The first question might be both critical and highly controversial. On the one hand, the CAD file may be the most valuable and critical part of an invention. Inventions that are currently patented can, nowadays, be represented digitally in the CAD file (e.g. by 3D scanning a protected item), with the CAD file actually containing relevant and key information about the patents. Moreover, it can be envisioned that, in the future, more and more inventions will arise that can be made only via AM techniques. Therefore, protecting the CAD file per se through patent law might be an important strategic alternative for inventors. At the same time, however, unless it is decided that CAD files can qualify as software, the only way to include CAD files into patent claims is to claim them as a specific set of instructions to bring about the invention. This type of strategy, however, has not yet been tested in patent claims drafting, and thus it remains to be seen whether such types of claims will be accepted by patent offices. Indeed, under current rules, the most typical strategy to protect CAD files is to keep them under trade secret rather than disclose them via patenting. In the case of patents related to bioprinting (e.g. Additive Manufacturing of human tissues), the most important challenge relates to issues of morality and ethics. Morality claims might be raised based on Article 53(a) EPC and Article 6(1) of the Biotech Directive that state that inventions ‘where the commercial exploitation would be contrary to public or morality’ are unpatentable (Refer to Minssen and Mimler (2017)). AM also raises important questions in terms of patent infringement and enforcement. Notably, AM raises difficulties for the enforcement of patent protection of items that can be reproduced via AM (contrary to IPRs on the

AM technologies per se). First, as with the other IPRs, it might be very challenging to track down every single direct infringement due to the digital element. For instance, even though it is clear that printing a protected object would equate to ‘making’ it in terms of patent law, trying to pursue actions against every small infringement of such nature might be challenging, expensive and, ultimately, useless (many of these small infringement activities might turn out being excused by the exceptions and limitations set of rules. For instance, both Article 31(a) of the CPC and Article 27(a) UPC Agreement specify that rights conferred by a patent shall not extend to ‘acts done privately and for non-commercial purposes’). It is also unclear to what extent the CAD file of a protected item can be considered as an essential element of the invention if it is not mentioned in the patent claims. Ultimately, this is an issue that will likely need to be addressed on a case-by-case basis. Regardless, it will be interesting to see if, and under what circumstances, courts will find in favour of infringement, e.g. if they will find an infringement through claim interpretation or the doctrine of equivalence. For product patents, it has been argued that one option could be to treat the CAD file in the same way as the physical patented product, thus being able to argue that (commercial) distribution of the CAD file is equivalent to the distribution of the physical product (Hollbrock and Osborn 2015). Whether these types of arguments might stand in court, however, remains to be seen.

In terms of infringing acts, AM might put further pressure on the need to interpret the concept of the illegitimate ‘making’ of the patented invention as opposed to the legitimate ‘repairing’ of it. Issues related to making versus repairing often arise when dealing with spare parts. On the one hand, the line between legitimate repair and illegitimate making is generally not clear in the European patent framework—there is no harmonisation on this issue in the law, while the case law is both scarce and, at times, contradictory (Ballardini et al. 2016). On the other hand, there is reason to believe that the technological and economic advantages portrayed by AM may very well lead to increasing business activities in the area of spare parts: AM makes spares increasingly available, reduces operation costs and allows faster delivery, tackling three of the major existing problems with the spare parts markets. Indeed, questions related to the extent to which users that do not fall within the category of private and non-commercial users are allowed to legitimately repair purchased products via AM techniques will become increasingly relevant the more AM technology spread. This will put pressure on the legal system to further develop these concepts.

Overall, the difficulties and costs associated with pursuing direct patent infringement activities in the AM framework are likely to push patent holders to direct their efforts towards secondary liability actions. At the same time, however, it appears clear that patent law is not yet well equipped with dealing in the digital sphere. Among the more pressing issues that AM raises in terms of patent law and secondary liability in Europe are questions related to whether, and to what extent, the interpretation of ‘means’ can be extended from the physical and tangible significance (the traditional way patent law have conceived means) to the digital one. It is currently not clear whether providing a CAD file of a protected item could qualify as providing the means to an essential element of the invention, due to the simple fact that CAD files are, by definition, digital and not physical in nature. Finally, the role of intermediaries

Table 2 Specific Challenges to Selected IPRs Posed by AM

Type	Challenges posed by AM
Copyright	<ul style="list-style-type: none"> ● Are CAD files copyrightable? ● What is the legal nature of CAD files (software, a database, a work of art or something else?)? Thus, what piece of copyright law apply to CAD files in terms of protection? ● Can a CAD file that is based on an already existing protected object attract a separate copyright right? ● Under what conditions can a CAD file be considered as not being ‘substantially’ identical to the protected physical item it represents and constituting its author’s own intellectual creation, thus, potentially attract a separate copyright? ● To what extent can the CAD file of an uncopyrightable(or partly uncopyrightable) item attract copyright protection?
Trademark	<ul style="list-style-type: none"> ● Are CAD files possible to be protected via trademarks? ● Can the use of a trademark in a CAD file be considered use ‘in relation to goods or services’, and thus, possibly constitute infringement? ● Can we consider CAD files, and services related to them, as identical or similar to the goods and services for which the trademark is registered?
Patents	<ul style="list-style-type: none"> ● Are CAD files patentable? ● What is the legal nature of CAD files (software or something else?)? ● Morality concerns in the context of bioprinting and patents ● Direct infringement: can ‘reproducing’ the CAD file of a protected invention be equated to ‘making’ the invention per se? ● Indirect infringement: can a CAD file be considered as the ‘means’ or ‘essential element’ of the invention? ● Borderline between illegitimate ‘making’ versus legitimate ‘repairing’ (especially relevant in the context of spare parts business)

(e.g. repositories, network administrators, etc.) might become central for finding for infringements (Table 2).

4 Navigating the Challenge—Some Practical Suggestions

Recent developments in the field of AM clearly indicate that this technology is likely to have huge impacts on the way we apply and interpret IP law principles (touching upon all areas of IP law) and doctrines in Europe. The digital element portrayed by AM, creating the possibility for the ‘digitalisation of objects’, opens up several previously unimagined questions on substantive and procedural IP law. Amongst the most urgent issues to be addressed are questions related to the legal nature of CAD files (in view of IP protection), and questions related to enforcement of IPRs (including issues related to territoriality) and infringement (both direct and indirect infringement actions). Another key area of IPRs that is likely to play an important role as AM develops and spreads relates to the types of exception and limitations to the rights, with special emphasis on acts done for private and non-commercial

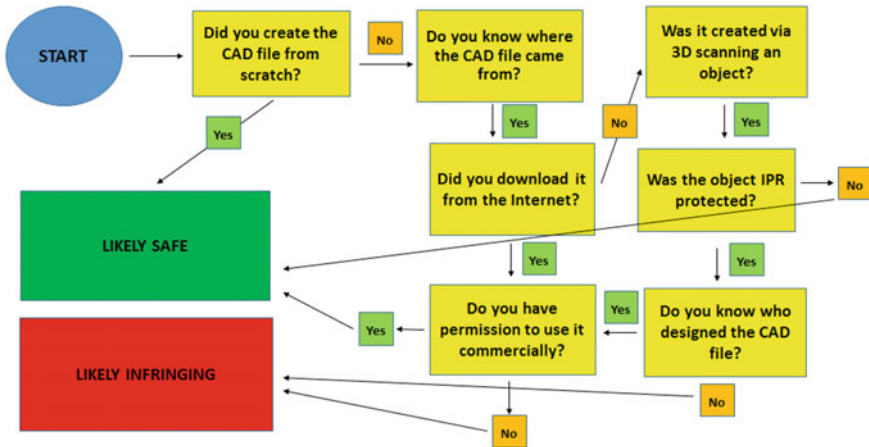


Fig. 1 Some questions to avoid infringement

purposes (due to the clear involvement of a large community of private users in the AM value chain). Finally, there is a clear indication that the difficulties and costs involved with pursuing actions against direct infringements might lead to a spur in secondary liability claims. It is likely that intermediaries, such as service bureaus, CAD files repositories and network administrators will be at the centre of several disputes. This is a complex puzzle and only time will tell when and how the pieces will come together. This chapter has shed light over the potential questions, as well as several possible solutions that courts or legislator could decide to follow. As an example, Fig. 1 illustrates some possible relevant questions that an educator or researcher could follow in order to understand possible IPR implications of CAD files.

This is, however, just an example that does not (nor intend to) cover all possibilities. Indeed, it is not possible to provide with clear-cut answers to the questions raised, as likely many of these questions will need to be answered on a case-by-case basis. Ultimately, it is important to raise awareness of this matter in order to educate the potential stakeholders (e.g. industry, academia and educational institutions, as well as policymakers and legislators) and ensure that decisions taken on the legal side pursue the ultimate goal to foster further innovation in this important technological area.

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List of Legislations

1. Agreement of a Unified Patent Court, [2013] C 175/1 (UPC Agreement)
2. Berne Convention for the Protection of Literary and Artistic Works (Berne, September 19, 1886) 828 U.N.T.S. 221, S. Treaty Doc. No. 99–27, 99th Cong. (1986), *as revised* at Paris, July 24, 1979 (Paris Act) and *amended* on September 28, 1979
3. Commission Regulation (EC) No 2868/95 implementing Council Regulation (EC) No 40/94 on the Community trade mark, and repealing Commission Regulation (EC) No 2869/95 on the fees payable to the Office for Harmonization in the Internal Market (Trade Marks and Designs)
4. Convention on the Grant of European Patents of 5 October 1973 (European Patent Convention, EPC)
5. Convention for the European patent for the common market, [1976] OJ L 17/1 (Community Patent Convention, CPC)
6. Council regulation (EU) No 1260/2012 of 17 December 2012 implementing enhanced cooperation in the area of the creation of unitary patent protection with regard to the applicable translation arrangements
7. 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
8. Directive 2001/29/EC on the harmonization of certain aspects of copyright and related rights in the information society, OJ L 167, 22 May 2001
9. Directive 2009/24/EC on the legal protection of computer programs, OJ L 111, 5 May 2009
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11. Regulation (EC) No 207/2009 of 26 February 2009 on the European Union trade mark, OJ L 78, 24 March 2009
12. Regulation (EU) No 1257/2012 of the European Parliament and of the Council of 17 December 2012 implementing enhanced cooperation in the area of the creation of unitary patent protection
13. Regulation (EU) 2015/2424 of the European Parliament and of the Council of 16 December 2015 amending Council Regulation (EC) No 207/2009 on the Community trade mark
14. UK Copyright, Designs and Patents Act 1988

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1. Case C-48/05 *Adam Opel AG v. Autec AG* [2007] ECR, I-01017
2. Case C-245/02 *Anheuser-Busch* [2004] ECR I-10989
3. Case C-206/01 *Arsenal Football v. Matthew Reed* [2002] ECR, I-10273
4. Case C-393/09 *Bezpečnostní softwarová asociace* [2010] ECR, I-13971 (*BSA*)
5. Case C-17/06 *Celine* [2007] ECR, I-07041
6. Joined Cases C-403/08 and C-429/08 *Football Association Premier League and Others* [2011] ECR, I-09083 (*FAPL*)
7. Case C-604/10 *Football Dataco and Others*, published in the electronic Reports of Cases
8. Joined Cases C-236/08–C-238/08 *Google France SARL v. Louis Vuitton Malletier SA* [2010] ECR, I-02417
9. Case C-5/08 *Infopaq International* [2009] ECR, I-06569
10. Case C-406/10 *SAS Institute Inc. v. World Programming Ltd.*, published in the electronic Reports of Cases (*SAS*)
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Rosa Maria Ballardini is a Senior Lecturer in Intellectual Property law at the University of Lapland/Faculty of Law. She was awarded the title of Docent of intellectual property law at the University of Helsinki (Finland) in 2017, the PhD degree at Hanken School of Economics (Finland) in 2012, the LL.M. degree at the University of Edinburgh (Scotland) in 2005 and the law degree at the University of Brescia (Italy) in 2003. Previously, Rosa has been an Assistant Professor in Intellectual Property Law at Hanken School of Economics (2012–2017) and a Visiting Scholar at UC Berkeley, Boalt Hall (California) (2008–2009). Since 2005 she has researched and thought in the field of IP law at various universities. Rosa's research interests focus on the interface between law (with focus on IP law) and technology. She has written extensively especially in the fields of patent and copyright law, open innovation and open source, as well as IP strategies and IP management in various technological contexts (e.g. software, 3D printing, Artificial Intelligence and Industrial Internet). Her research approach is multidisciplinary, combining law, technology, business and policy via using different types of methodologies (e.g. traditional legal research methods, empirical methods, as well as design thinking to law).

External Resources: The University of Lapland (ULap) offers BA and Master's level degrees in law and aims to be recognized internationally as an Arctic and Northern university that combines social sciences with art, design and technology. This need is especially highlighted in the field of education and research in IP law that naturally bridges law with technology. As a result, IP law is currently one of the growing key scientific areas at the ULap/Law with various research and educational projects having been launched lately in the field. ULap also has Institutes that are organising research and educational programmes in the fields of commercial law (the Institute of Commercial Law) and ICT law (the Institute of Legal Informatics). <http://www.ulapland.fi>.