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Market Power and Competition Law in the Software Industry

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Part IV: Non-Pricing Practises in the Software Industry

CHAPTER 5.

SOFTWARE INTEROPERABILITY INFORMATION DISCLOSURE AND COMPETITION LAW³⁸²

ABSTRACT

Software interoperability information is indispensable in establishing connexions among the parts of a programme and with applications and users. According to the concepts of copyright and expression dichotomy, and to the prevailing formulation that the function of software interoperability information has a bottleneck effect in restricting competition, the conceptual portions of software interoperability information are not protected under copyright, and furthermore, software interoperability interfaces are subject to reverse engineering. The scope of copyright protection and the actual restriction on competition due to the refusal to disclose software interoperability information have convinced authorities and courts to grant a duty to disclose. However, an examination of the compulsory disclosure of interoperability information and the competition situation in the software market leads this study to posit that although the compulsory disclosure of software interoperability information is alleged to have certain benefits; it harms the copyright holder and, as a competition remedy, helps secondary market players at the expense of primary market players. This remedy in effect protects competitors, not competition throughout the entire market; it was contrary to the goal of EU competition law. In addition, this study observes that when enlarging the scope of the compulsory disclosure of software interoperability information acts to create competition, the function of competition law as an ex post remedy is exceeded.

I. INTRODUCTION

Software interoperability information connects platform software, applications and users, “it is defined as the ability for multiple software components written in different programming languages to communicate and interact with each other”.³⁸³ Disclosure of software interoperability information is the topic of heated debate, as disclosure and the discontinuation of disclosure are

³⁸² This Chapter was published in European Competition Law Review in 2014. *Software Interoperability Information Disclosure and Competition Law*, 35 E.C.L.R. 235 (2014). This chapter studies the phenomenon of refusal to disclose software interoperability, a form of market power leverage by dominant firm. It is a kind of market power leverage that different to pricing leverage, which is the topic of Part III. The next two chapters will study other forms of non-pricing leverage, namely technically tying software and software exclusive dealing.

³⁸³ Wileden J. C. and Kaplan A., *Software Interoperability: Principles and Practice*, In Proceedings of 21st International Conference on Software Engineering, p 631. (Numerous mechanisms enabling interoperability between programs written in different languages have appeared over the years. Examples range from primitive solutions such as simple, ASCII ... OMG's CORBA).

not merely an intellectual property (IP) law issue but also a matter of competition law. Interoperability information disclosure matters greatly in setting standards or obtaining market dominance in the software market. After a certain technology has been set as a public standard, no other competing technologies are allowed to compete with the public standard. Correspondingly, the public standard has a duty to offer interoperability information to all interested market players. The public disclosure of technical standards is recognised to have many benefits: “when standards are open and freely available, it becomes possible for anyone to develop an interoperable implementation. Proponents of open standards focus on these benefits without qualifications or caveats.....Many advocates of open standards assume an open standard will lead to a vibrant, competitive market that removes vendor lock-in”.³⁸⁴ Finally, in the light of such benefits, in certain markets, for instance the information and communication technologies sector, it has been affirmed by industrial regulation provision.³⁸⁵

In contrast to public standards, the acceptance of private standards by most market players is not required by industrial or government regulation: players gain market dominance through competition in innovation. Of course, they have no duty to disclose information to their competitors. However, after a firm’s product becomes the de facto standard of a market, corresponding interoperability information disclosure enters the interface of IP law and competition law. From the IP law perspective, it is the IP holder’s right to dispose the interoperability information, and there is no duty to disclose because the product is not a public standard. Anyway, the lack of disclosure is bound to limit follow-on innovation. From a competition law perspective, refusal to disclose is likely to limit competition in the secondary market. This situation is evident in the software market, and relevant legal practises have already emerged. As a result, the prevailing treatment of the refusal to disclose interoperability information is to grant a duty of disclosure to enable follow-on innovation and competition in secondary markets.

In scrutinising the alleged benefits of compulsory disclosure of software interoperability information and the competition mechanism in the software market, this study perceived that the compulsory disclosure of software interoperability information benefits follow-on innovation and competition is theoretically untenable and, on the contrary, such disclosure harms innovation in practise.

³⁸⁴ Shah, Rajiv, Kesan, Jay P, *Lost in Translation: interoperability Issues for Open Standards*, 8 ISJLP 119 (2012). See also: Lawrence Lessig, *The Limits in Open Code: Regulatory Standards and the Future of the Net*, 14 Berkeley Tech. L.J. 759, pp 764-766 (1999).

³⁸⁵ *Commission Delegated Regulation (EU) No 305/2013 of 26 November 2012 supplementing Directive 2010/40/EU of the European Parliament and of the Council with regard to the harmonised provision for an interoperable EU-wide eCall*. Available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:091:0001:0004:EN:PDF>; The Digital Millennium Copyright Act (DMCA).

Part II examines the background of compulsory disclosure, which is compulsory licensing, which lies at the centre of IP law and competition law, and presents the current status of compulsory disclosure in the software market. Part III analyses why the argument for the benefits of the compulsory disclosure of software interoperability information is theoretically unconvincing and practically harmful. It notes that reverse engineering acts as a substitute method for compulsory disclosure. Finally, this part of the chapter describes situations in which the refusal to disclose software interoperability information constitutes an abuse of market dominance and therefore becomes subject to compulsory disclosure. Finally, the chapter notes that software interoperability information generally should not be subject to compulsory disclosure but that attention should be paid to the use of discontinued disclosure as a means to monopolise a market.

II. LEGAL BACKGROUND AND POLICY ON SOFTWARE INTEROPERABILITY INFORMATION DISCLOSURE

Software interoperability information is one component of software. In the case of platform software, if voluntary disclosure is made to all application software, the platform software's user network will be enlarged, this will be a competitive advantage. However, the current prevailing policy from both copyright law and competition law is prone to impose a duty to disclose software interoperability information. This policy is controversial in promoting technological innovation and competition. In order to understand this conflicting situation, we must know the background to the compulsory disclosure policy.

A. COMPETITION RULES ON COMPULSORY ACCESSING INTELLECTUAL PROPERTY LAW PROTECTED WORK

1. INTELLECTUAL PROPERTY RIGHTS AND REFUSAL TO LICENSE

IP rights are one type of property right, granting a right-holder the right to dispose of the protected work exclusively. They have existed since the beginning of civilization. Historically, most IP rights were not related to commercial use; like a painting or specially designed tool, they were invented for non-commercial uses. This type of usage is one type of IP right, the right to use and enforce. More recently, as commercial strategies and law have developed, whether a legal duty can be imposed on an IP right-holder to use and enforce an IP right has become controversial. In *Continental Paper Bag Co. v. Eastern Paper Bag Co.*,³⁸⁶ Continental Paper Bag and Eastern Paper Bag conflicted in a “self-opening bag” patent, which had never been put into effect or use by Eastern Paper Bag.³⁸⁷ The decision formulates that while “competitors were excluded from the

³⁸⁶ *Continental Paper Bag Co. v. Eastern Paper Bag Co.* 210 U.S. 405, 28 S.Ct. 748 U.S. (1908).

³⁸⁷ *Continental Paper Bag Co. v. Eastern Paper Bag Co.* 210 U.S. 405, 28 S.Ct. 748 U.S. (1908), at 406-414.

use of the new patent...such exclusion may be said to have been of the very essence of the right conferred by the patent, as it is the privilege of any owner of property to use or not use it, without question of motive”.³⁸⁸ In this case, the court confirmed that an IP right-holder has no legal obligation to use and enforce its right. Non-use and refusal to license were subsequently confirmed by the U.S. Patent Act.³⁸⁹

Following the above progress, an IP right-holder’s right to license its right was examined by the US courts. These courts have reached a common view: except for public interests,³⁹⁰ IP right-holders generally are not required to license their work by either IP law or antitrust law. This common view appears in many cases. In *Hartford-Empire Co. v. United States*,³⁹¹ the court held: “a patent owner is not in a position of a quasi-trustee for public or under any obligation to see that the public acquires free right to use the invention, and he has no obligation either to use it or to grant its use to others but if he discloses the invention in his application so that it will come into public domain at end of 17-year period of exclusive right, he has fulfilled the only obligation imposed by statute”³⁹²; in *SCM Corp. v. Xerox Corp.*,³⁹³ the court held a similar position: “where a patent has been lawfully acquired, subsequent conduct permissible under the patent laws cannot trigger any liability under the antitrust laws”.³⁹⁴

European courts hold parallel opinions in legislation. Guidance on the Commission's enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertakings³⁹⁵ provides that: “when setting its enforcement priorities, the Commission starts from the position that, generally speaking, any undertaking, whether dominant or not, should have the right to choose its trading partners and to dispose freely of its property”.³⁹⁶

³⁸⁸ *Continental Paper Bag Co. v. Eastern Paper Bag Co.* 210 U.S. 405, 28 S.Ct. 748 U.S. (1908), at 429-430.

³⁸⁹ 35 USC section 271 (a)- Infringement of patent.

³⁹⁰ Under certain circumstance intellectual property will suffer compulsory licensing out of public interest reasons. This principle appears in legislations(for instance US legislation: Clear Air Act and Atomic Energy Act), case law(*City of Milwaukee v. Activated Sludge, Inc.*, 69 F.2d 577 (7th Cir. 1934)) and even international trade treaties (TRIPS). Relevant legal analysis please see: Kurt M. Saunders, *Patent Nonuse and the Role of Public Interest as a Deterrent to Technology Suppression*, 15 Harv. J. L. & Tech. (2002); Ruth E. Freeburg, *No Safe Harbor and No Experimental Use: Is it Time for Compulsory Licensing of Biotech Tools?* 53 Buff. L. Rev. 351 (2005); Cole M. Fauver, *Compulsory Patent Licensing in the United States: An Idea Whose Time Has Come*, 8 Nw. J. Int'l L. & Bus.666 (1988); Aditi Bagchi, *Compulsory Licensing and the Duty of Good Faith in TRIPS*, 55 Stan. L. Rev 1529(2003).

³⁹¹ *Hartford-Empire Co. v. United States*, 323 U.S. 386. (1945).

³⁹² *Hartford-Empire Co. v. United States*, 323 U.S. 386. (1945). at 432–433. Citing: *United States v. American Bell Telephone Co.*, 167 U.S. 224, 249, 17 S.Ct. 809, 814, 42 L.Ed. 144(1897); *Continental Paper Bag Co. v. Eastern Paper Bag Co.*, 210 U.S. 405, 424, 429, 430, 28 S.Ct. 748, 753, 755, 756, 52 L.Ed. 1122 (1908).

³⁹³ *SCM Corp. v. Xerox Corp.* 645 F.2d 1195 C.A.Conn., 1981. (March 12, 1981).

³⁹⁴ *SCM Corp. v. Xerox Corp.* 645 F.2d 1195 C.A.Conn., 1981. (March 12, 1981), at 1206.

³⁹⁵ *Guidance on the Commission's enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertakings.* <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2009:045:0007:0020:EN:PDF>.

³⁹⁶ *Guidance on the Commission's enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertakings*, at 75.

Moreover, the principle that there is no obligation to license, even when competition law issue is hence raised, has been confirmed by case law. In *Intergraph Corp. v. Intel Corp.*,³⁹⁷ the court held “it is also correct that the antitrust laws do not negate the patentee's right to exclude others from patent property”.³⁹⁸ This case has precedent in IP products related antitrust cases³⁹⁹. The reason why IP product distribution is a major concern of competition law analysis is because IP products are under monopoly supply, which creates an inherent monopoly power. Furthermore, they are distributed via licensing, and there is freedom to choose whether, when, and with whom to license.⁴⁰⁰ This freedom is likely to lead to restraints on distribution, market elimination, and other competition law targets. However, according to scholarly analysis, an IP right-holders’ freedom of market operation is the reward for their capital and innovation investment, and if this freedom is not guaranteed, then no one will invest in the development of new technology and new products, which are mutual goals of IP law and competition law.⁴⁰¹ This IP right was demonstrated in *In re Independent Service Organizations Antitrust Litigation*.⁴⁰² In the case, an independent service organisation (ISO) brought suit, claiming that the copier manufacturer's refusal to sell its patented parts and copyrighted manuals and to license copyrighted software violated antitrust laws. The United States District Court for the District of Kansas cited Federal Trade Commission Antitrust Guidelines for the Licensing of Intellectual Property 4 (1995) and *Glass Equipment Development Inc. v. Besten, Inc.*⁴⁰³ to demonstrate its position on the compulsory licensing, stated that “in the absence of any indication of illegal tying, fraud in the Patent and Trademark Office, or sham litigation, the patent holder may enforce the statutory right to exclude others from making, using, or selling the claimed invention free from liability under the antitrust laws. We therefore will not inquire into his subjective motivation for exerting his statutory rights, even though his refusal to sell or license his patented invention may have an anticompetitive

³⁹⁷ *Intergraph Corp. v. Intel Corp.* 195 F.3d 1346 C.A.Fed. (Ala.), (1999).

³⁹⁸ *Intergraph Corp. v. Intel Corp.* 195 F.3d 1346 C.A.Fed. (Ala.), (1999), at 1362.

³⁹⁹ *U.S. v. Microsoft Corp.* 87 F.Supp.2d 30 D.D.C.,(2000); *Golan v. Pingel Enterprise, Inc.* 310 F.3d 1360 C.A.Fed. (Cal.), (2002); *Maris Distributing Co. v. Anheuser-Busch, Inc.* 302 F.3d 1207 C.A.11 (Fla.), (2002); *In re Remeron Antitrust Litigation* 335 F.Supp.2d 522 D.N.J.,(2004); *Daisy Mountain Fire Dist. v. Microsoft Corp.* 547 F.Supp.2d 475 D.Md.,(2008); *SolidFX, LLC v. Jeppesen Sanderson, Inc.* 935 F.Supp.2d 1069 D.Colo. (2013).

⁴⁰⁰ DONALD S. CHISUM, PATENTS, (MATTHEW BENDER 1978) § 19.04[3], PP 19-120 ; RICHARD HOLZMANN, INFRINGEMENT OF THE UNITED STATES PATENT RIGHT: A GUIDE FOR EXECUTIVES AND ATTORNEYS, P 150 (1995); JAMES B. KOBAC, INTELLECTUAL PROPERTY MISUSE: LICENSING AND LITIGATION, 37 (ABA PROFESSIONAL EDUCATION, 2000); ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY ISSUED BY THE U.S. DEPARTMENT OF JUSTICE AND THE FEDERAL TRADE COMMISSION APRIL 6, 1995. AT 2.3 PROCOMPETITIVE BENEFITS OF LICENSING.

⁴⁰¹ The author writes this description based on *Mazer v. Stein* 347 U.S. 201, 74 S.Ct. 460 U.S. (1954). Literature please see: Marshall A. Leaffer, *Understanding Copyright Law*, pp 3, 4 (Matthew Bender, 2ed. 1995); David H. Kramer, *Who Can Use Yesterday's News?: Video Monitoring and the Fair Use Doctrine*, 81 Geo. L.J. 2345, p 2352 (1993).

⁴⁰² *In re Independent Service Organizations Antitrust Litigation*. 203 F.3d (Fed. Cir. 2000).

⁴⁰³ *Glass Equipment Development, Inc. v. Besten, Inc.* 174 F.3d 1337 C.A.Fed. (W.Va.) (1999). (Glass Equipment Development Inc., a patent owner who brings suit to enforce the statutory right to exclude others from making, using, or selling the claimed invention is exempt from the antitrust laws, even though such a suit may have an anticompetitive effect, unless the infringement defendant proves one of two conditions).

effect, so long as that anticompetitive effect is not illegally extended beyond the statutory patent grant”.⁴⁰⁴

The above US policy is not alone. Similar policies have been approved in the EU, and it is particularly manifest in case law. In *AB Volvo v Erik Veng*,⁴⁰⁵ the European Court of Justice held that, “that an obligation imposed upon the proprietor of a protected design to grant to third parties, even in return for a reasonable royalty, a licence for the supply of products incorporating the design would lead to the proprietor thereof being deprived of the substance of his exclusive right, and that a refusal to grant such a licence cannot in itself constitute an abuse of a dominant position”.⁴⁰⁶

2. THE COMPETITION BASIS FOR COMPULSORY ACCESS TO INTELLECTUAL PROPERTY, ESSENTIAL FACILITY DOCTRINE AND BEYOND

Although IP law grants exclusive control, this right is not without exception. In addition to reasons related to public interest, competition forms the basis of further reasons for compulsorily accessing IP goods.

A. ESSENTIAL FACILITY DOCTRINE

1) The scope for the application of the essential facility doctrine

The essential facility doctrine is designed for the purpose of competition, to allow competitors access to certain facilities so as to compete in a relevant market. In fact, this doctrine is a compulsory dealing obligation imposed on facility owners by competition law. Without the compulsory dealing obligation, a facility owner can charge anti-competitive prices or refuse to deal in order to maximise profits. In the early application of this doctrine, some scholars were critical of its wide scope: “the law (essential facility doctrine) evolves now in the expansionary second phase, which needs to be brought back to antitrust policy”.⁴⁰⁷ As a result, in order to avoid the doctrine’s certain harm to development in certain industries, the scope of application was restricted to a limited area. According to Hovenkamp, the essential facility doctrine is most frequently applied in the following areas: “(1) natural monopolies or joint venture arrangements subject to significant economies of scale; (2) structures, plants or other valuable assets that were created as part of a regulatory regime, whether or not they are properly

⁴⁰⁴ *In re Independent Service Organizations Antitrust Litigation*. 203 F.3d 1326-1329 (Fed. Cir. 2000).

⁴⁰⁵ Case 238/87 Judgment of the Court of 5 October 1988. *AB Volvo v Erik Veng (UK) Ltd*.

⁴⁰⁶ Case 238/87 Judgment of the Court of 5 October 1988. *AB Volvo v Erik Veng (UK) Ltd*, at Summary 1 and judgment 8.

⁴⁰⁷ Phillip Areeda, *Essential Facilities: An Epithet in Need of Limiting Principles*, 58 Antitrust L. J. 841 (1990). Other criticism please see: Herbert Hovenkamp, *Federal Antitrust Policy: The Law of Competition and Its Practice*, pp 336-340 (West Academic Publishing 4th edition 2011).

natural monopolies; or (3) structures that are owned by the government and whose creation or maintenance is subsidized”.⁴⁰⁸

The scope of application is only one general consideration to take into account when applying the essential facility doctrine. In addition, there are practical problems that must be stressed. For instance, in what circumstances should the essential facility doctrine be applied?

The application of the essential facility doctrine has undergone a revolution since the 1970s,⁴⁰⁹ and although some complementary problems are still under debate, four elements are now the main focus when applying it. These four elements developed as a result of a number of cases (*Terminal Railroad Association*,⁴¹⁰ *Otter Tail*,⁴¹¹ *Aspen Skiing*⁴¹²) and finally matured in *MCI Communications Corp. v. American Tel. & Tel. Co.*, where the United States Court of Appeals described four elements as requirements in applying the essential facility doctrine: “(1) control of the essential facility by a monopolist; (2) a competitor's inability practically or reasonably to duplicate the essential facility; (3) the denial of the use of the facility to a competitor; and (4) the feasibility of providing the facility to competitors”.⁴¹³

The first element stresses the prerequisite that the essential facility be under a monopoly control. This element confirms two points: first, the control of the essential facility is limited to a single entity. This stipulation avoids disputes regarding when an essential facility is controlled jointly or collectively. Joint or collective control situations consist of concerted practises; applying essential facility doctrine to such a practise is not appropriate because concerted practises are ruled by the competition law that governs concerted practises, such as Section 1 of the Sherman Act. The second element defines the status of an essential facility, that is, the facility has no substitutes. This element is controversial because there are different understandings regarding whether a facility can be practically duplicated. These differences can be observed in different decisions. In the US courts, cases applying the essential facility doctrine have mainly occurred in naturally monopolised markets, as Hovenkamp has observed. Nonetheless, in Europe, the essential facility doctrine is applied beyond natural monopoly markets. Airlines, information

⁴⁰⁸ Herbert Hovenkamp, *Federal Antitrust Policy: The Law of Competition and Its Practice*, p 337 (West Academic Publishing 4th edition 2011) (citation omitted).

⁴⁰⁹ *Hecht v. Pro-Football, Inc.*, 570 F.2d 982, 992 (D.C. Cir. 1977); *Venture Technology, Inc. v. National Fuel Gas Co.*, 1980-81 Trade Cas. (CCH) 63,780, at 78,167 (W.D.N.Y. 1981); *Fishman v. Wirtz*, 1981-2 Trade Cas. (CCH) 1 64,378 (ND Ill. 1981); *United States v. Realty Multi-List, Inc.*, 629 F.2d 1351 (5th Cir. 1980); *Byars v. Bluff City News Co.*, 609 F.2d 843, 859-64 (6th Cir. 1979); *General Motors Corp. (Crash Parts)*, 3 Trade Reg. Rep. (CCH) 21,931 (FTC 1982).

⁴¹⁰ *United States v. Terminal R.R. Ass'n.*, 224 U.S. 383, 32 S.Ct. 507, 56 L.Ed. 810 (1912).

⁴¹¹ *Otter Tail Power Co. v. United States*, 410 U.S. 366, 93 S.Ct. 1022, 35 L.Ed.2d 359 (1973).

⁴¹² *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585, 105 S.Ct. 2847, 86 L.Ed.2d 467 (1985), *Aspen Highlands Skiing Corp. v. Aspen Skiing Co.*, 738 F.2d 1509, 1521 (10 th Cir.1984), *aff'd* on other grounds.

⁴¹³ *MCI Communications Corp. v. American Tel. & Tel. Co.*, 708 F.2d at 1132-33 (7th Cir.), *cert denied*, 464 U.S. 891 (1983) at IV. A. 1.

goods, and even services markets are subject to the application of the essential facility doctrine,⁴¹⁴ although competing or substituting suppliers are likely to emerge in these markets.

The third element raises two unclear points. The first point is whether the denial of access also applies to conditional denial. Conditional denial happens when a facility controller sets conditions for accessing the facility. It normally relates to limiting the competitiveness of the subscriber of the facility. As a result, it must also be considered under the essential facility doctrine, but it may involve more complicated remedies, such as judicial or pricing supervision.⁴¹⁵ The second point is the scope of the competitor. In the industrial economic setting, many firms are involved in two or more markets, under which situation, cost and competition relationships engage two- or multi-sided market theory. In the two- or multi-sided market, the scope of competitors is broader than that within a single market, and the competition relationship is more complicated as a result.

Although there are debates on the scope of application of the essential facility doctrine, one point is certain: it does apply to naturally monopolised markets. However, there is uncertainty concerning whether it applies to product markets protected by IP law. Under current competition law practise and IP policy, it is hard to make an assertion on whether the essential facility doctrine applies to these markets.

2) The applicability of the essential facility to IP goods

According to the essential facility doctrine scrutiny method, IP rights are treated as a natural monopoly. According to IP law, an IP right is controlled exclusively by its owner, no one is allowed to access the IP right unless there is a licensing agreement, which in effect is the same situation as the monopoly control of an essential facility. However, products protected by IP rights differ in two ways from natural monopoly goods.

Firstly, naturally monopolised facilities have no substitutes, whereas most IP rights have competing and substitutive goods.⁴¹⁶ This contrasting character is based on the different industrial characters of the IP goods market and the naturally monopolised market. Emerging innovative goods compete with existing innovation goods, and as a consequence innovation and competition are both promoted. Therefore, substitutive or competitive IP goods are encouraged to emerge as a result of both competition policy and industrial development. Typical goods in such situations include mobile phone operating system software, office software and web

⁴¹⁴ Richard Whish, David Bailey, *Competition Law*, (Oxford University Press, 7 edition 2012).

⁴¹⁵ Herbert J. Hovenkamp, *Unilateral Refusals to Deal, Vertical Integration, and the Essential Facility Doctrine*, p 4 (Univ. of Iowa Legal Studies, Research Paper No. 08-31, 2008), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1144675.

⁴¹⁶ In certain circumstances, in a secondary market, even when the primary good has substitutes, it can still be indispensable and constitutes an essential facility because of interoperability problems. However, in this situation, it is not rational for competitors to enter such a small market. In fact, there are other solutions for access, which raises the second point.

browser software. Meanwhile, naturally monopolised facilities are not encouraged to produce substitutive ones, as “most of the things found by courts to be essential facilities have fallen into one of three classifications: (1) nature monopolies or joint venture arrangements subject to significant economies of scale; (2) structures, plants or other valuable productive assets that were created as part of a regulatory regime, whether or not they are properly natural monopolies; or (3) structures that are owned by the government and whose creation or maintenance is subsidized”.⁴¹⁷ A facility with such characters is either un-duplicable or not economically rational in establishing competing ones. Because of the difference between the established industrial characters of the two kinds of markets, applying essential facility doctrine in the IP-based market is apparently not in line with competition and industrial policy.

Secondly, even when an IP right-holder refuses access, it is possible to engage in reverse engineering in order to obtain the rejected product for either fair use or competitive purposes, while there is no similar possibility to naturally monopolised facility. Reverse engineering refers to “users and developers who lack access to source code may engage in ‘reverse engineering’, which attempts to reverse the steps originally involved in creating a program. Reverse engineering allows a user to create an equivalent of the original source-code version of the program. Methods of reverse engineering range from analyzing screen displays of the object code to decompilation or disassembly of the program.”⁴¹⁸ Reverse engineering an IP-law-protected work has been accepted by law as a fair use and inherent right.⁴¹⁹ In the US, reverse engineering is reasoned to be a legal practise under case law. In 1992, two cases were decided with the theme of the legal status of reverse engineering. In *Atari Games Corp. v. Nintendo of America*,⁴²⁰ the United States Court of Appeals for the Federal Circuit held that “reverse engineering, untainted by the purloined copy of the 10NES program and necessary to understand 10NES, is a fair use”.⁴²¹ This legal status was further upheld in *Sega Enterprises Ltd. v. Accolade*:⁴²² “we conclude that, when the person seeking the understanding has a legitimate reason for doing so and when no other means of access to the unprotected elements exists, such disassembly is as a matter of law a fair use of

⁴¹⁷ Herbert Hovenkamp, *Federal Antitrust Policy: The Law of Competition and Its Practice*, pp 310,311 (West Group 3rd edition February 2005).

⁴¹⁸ Charles R. McManis, *Intellectual Property Protection and Reverse Engineering of Computer Programs in the United State and the European Community*, 8 Berkeley Tech. L.J. 25 p 29 (1993); Brian Fitzgerald, Cristina Cifuentes, Anne Fitzgerald, and Michael Lehmann, *Innovation, Software, and Reverse Engineering*, 18 Santa Clara High Tech. L.J. 121 p 127 (2001). (Emulation is the process of running a programme for a machine on another machine by decoding source machine code instructions and simulating the functionality of such instructions on the target machine).

⁴¹⁹ Pamela Samuelson, Suzanne Scotchmer, *The Law and Economics of Reverse Engineering*, 111 Yale L.J. 7 p 1577 (2002), citation omitted. (Reverse engineering has a long history as an accepted practice. What it means, broadly speaking, is the process of extracting know-how or knowledge from a human-made artifact. Lawyers and economists have endorsed reverse engineering as an appropriate way to obtain such information, even if the intention is to make a product that will draw customers away from the maker of the reverse-engineered product).

⁴²⁰ *Atari Games Corp. v. Nintendo of America, Inc.*, 975 F.2d 832 (Fed. Cir. 1992).

⁴²¹ *Atari Games Corp. v. Nintendo of America, Inc.*, 975 F.2d 832 (Fed. Cir. 1992), at [24].

⁴²² *Sega Enterprises Ltd. v. Accolade, Inc.* 977 F.2d 1510 C.A.9 (Cal.) (1992).

the copyrighted work”.⁴²³ In contrast to the US approach, EU legislation confirms that reverse engineering is not a copyright infringement. The Directive on the Legal Protection of Computer Programs⁴²⁴ provides that: “the authorisation of the right holder shall not be required where reproduction of the code and translation of its form within the meaning of points (a) and (b) of Article 4(1) are indispensable to obtain the information necessary to achieve the interoperability of an independently created computer program with other programs.....”⁴²⁵ These cases and legislation confirmed that reverse engineering is a legal practise that is not an infringement of copyright law. But the acceptability of producing a competing product through reverse engineering was not determined at this period.

As the innovation-based market evolves, so the problem of whether producing a competing product through reverse engineering should be allowed becomes vitally important, “because this is the most common and most economically significant reason to reverse-engineer in this industrial context”.⁴²⁶ The legal status of producing a competing product through reverse engineering under competition law is clearly defined by case law in both the US and EU. In the US appeals case *Sega Enterprises Ltd. v. Accolade*,⁴²⁷ in the Northern District of California decision. In the case, Accolade, Inc. (Defendant) disassembled and then emulated Sega Enterprises Ltd.’s (Plaintiff) video game programmes so as to discover the requirements for compatibility with Plaintiff’s console.⁴²⁸ Reverse engineering with the aim of creating competing products was decided not to be legal⁴²⁹: “the copying at issue here was undertaken by Accolade for financial gain and was aimed at the creation of a competitive product which will adversely impact the value of the copyrighted work. Such commercial use is presumptively not ‘fair use’”.⁴³⁰ “Fair use, when properly applied, is limited to copying by others which does not materially impair the marketability of the work which is copied”.⁴³¹ “While accolade’s game cartridges compete directly with those of Sega Enterprises, Ltd, which has likely lost sales as a result of Accolade’s copying”.⁴³² However, after the decision was overruled by appeal court, reverse engineering for competitive purposes became legal practise in US courts.

⁴²³ *Sega Enterprises Ltd. v. Accolade, Inc.* 977 F.2d 1510 C.A.9 (Cal.) (1992) at 1515.

⁴²⁴ Council Directive 2009/24/EC of 23 April 2009 on the legal protection of computer programs (codified version), OJ L 111/16, (5 May 2009).

⁴²⁵ Council Directive 2009/24/EC of 23 April 2009 on the legal protection of computer programs (codified version), OJ L 111/16, (5 May 2009), at Article 6 Decompilation 1.

⁴²⁶ Pamela Samuelson, Suzanne Scotchmer, *The Law and Economics of Reverse Engineering* 111 Yale L.J. 7 p 1582 (2002).

⁴²⁷ *Sega Enterprises Ltd. v. Accolade, Inc.*, 977 F.2d 1510 (1993).

⁴²⁸ *Sega Enterprises Ltd. v. Accolade, Inc.* 785 F.Supp. 1392 N.D.Cal.,(1992).

⁴²⁹ *Sega Enterprises Ltd. v. Accolade, Inc.* 785 F.Supp. 1392 N.D.Cal.,(1992).

⁴³⁰ *Sega Enterprises Ltd. v. Accolade, Inc.* 785 F.Supp. 1392 N.D.Cal.,(1992).

⁴³¹ *Sega Enterprises Ltd. v. Accolade, Inc.* 785 F.Supp. 1392 N.D.Cal.,(1992), at A.

⁴³² *Sega Enterprises Ltd. v. Accolade, Inc.* 785 F.Supp. 1392 N.D.Cal.,(1992), at A.

The EU case is *SAS Institute Inc. v. World Programming Ltd*⁴³³ is similar to the Sega decision.⁴³⁴ SAS Institute Inc (hereinafter SAS) licenses a software system allowing customers to deposit files. The system contains a platform and many applications, but the platform and applications are integrated.⁴³⁵ World Programming Ltd (hereinafter WPL) reverse-engineered the platform part of SAS's software in order to compete with it.⁴³⁶ In the case, SAS sued WPL for copyright infringement, and the British court asked the European Court to interpret Article 1(2) of Council Directive 91/250/EEC of 14 May 1991 on the legal protection of computer programmes. The Grand Chamber interpreted: the provision "must be interpreted as meaning that neither the functionality of a computer programme nor the programming language and the format of data files used in a computer programme in order to exploit certain of its functions constitute a form of expression of that programme and, as such, are not protected by copyright in computer programmes for the purposes of that directive".⁴³⁷ This case affirms that reverse engineering is legitimate, even when aimed at creating competing products.

The evolution of the legal status of reverse engineering in the EU and the US indicates that reverse engineering works as a function of generating substitutive or competing goods in the competition process. This character contradicts the criterion for applying the essential facility doctrine that the essential facility must be unduplicable. The contradiction suggests that in theory, the essential facility doctrine does not apply to IP goods.⁴³⁸ Despite this apparent inapplicability, in IP markets the essential facility doctrine is being applied differently in the EU and the US.

3) Applying essential facility doctrine to the US IP market

In the US, the application of the essential facility doctrine is cautious: "courts are properly extremely reluctant to find liability on the basis of a company's unilateral refusal to deal, even if that company is a monopolist. That reluctance is even stronger when a refusal to license intellectual property rights is at stake, because the ability to exclude others from using the right is

⁴³³ *SAS Institute Inc v World Programming Ltd* (C-406/10) (May 2, 2012) <http://curia.europa.eu/juris/liste.jsf?language=en&num=C-406/10>.

⁴³⁴ *Sega Enters. Ltd. v. Accolade, Inc.*, 977 F.2d 1510 (9th Cir. 1992), as amended, 1993 U.S. App. LEXIS 78 (9th Cir. 1993).

⁴³⁵ The author's generalisation is based on "Opinion Of Advocate General Bot" delivered on 29 November 2011 (2) in Case C-406/10. European Court Reports 2011 page 00000. At II - Facts and main proceedings.

⁴³⁶ The author's generalisation is based on "Opinion Of Advocate General Bot" delivered on 29 November 2011 (2) in Case C-406/10. European Court Reports 2011 page 00000. At III - The questions referred for a preliminary ruling.

⁴³⁷ *SAS Institute Inc v World Programming Ltd* (C-406/10) (2012) R.P.C. 31 European Court of Justice (Grand Chamber) 2012-05-02. At 46,71.

⁴³⁸ It is noticed there are different kinds of IP goods, most IP goods have competing ones. However, certain kinds of IP goods cannot have competing products and practically can't be duplicated, such as copyrighted databases. Whether this kind of IP goods applies to essential facility doctrine is an academic frontier. Despite of this, some decisions had applied the doctrine. In *BellSouth Adver. & Publ'g Corp. v. Donnelley Info. Publ'g, Inc.*, 719 F. Supp. 1551, (S.D. Fla. 1988), the decision formulates: Although the doctrine of essential facilities has been applied predominantly to tangible assets, there is no reason why it could not apply, as in this case, to information wrongfully withheld. The effect in both situations is the same: a party is prevented from sharing in something essential to compete (at 1566). Similar situations also appeared in *Rural Tel. Serv. Co., Inc. v. Feist Publ'ns, Inc.*, 737 F. Supp. 610, 617-20 (D. Kan. 1990).

at the heart of IP policy”.⁴³⁹ Part of the reason for this is that the application scope of the doctrine is narrow, and it is designed for special markets, such as utilities, transportation facilities or other physical assets. Another part of the reason is that the essential facility doctrine ultimately requires compulsory access, which is a great threat to property rights that deters investment in the relevant market. As a complementary effect, it is particularly vulnerable to the adverse effects of compulsory licensing because the IP goods market is an innovation-only market, as compared to traditional markets.

4) Applying essential facility doctrine to the IP in the EU market

Although there is established theory and practise suggesting that the essential facility doctrine is not appropriate for application to IP goods, the doctrine is nonetheless widely applied in Europe,⁴⁴⁰ and certainly in IP markets, despite it did not appear in the decision literally. As mentioned previously, in the EU, the essential facility doctrine has been applied in nearly all markets; it was first developed and applied in the traditional markets, and then it is applied in the IP markets. The *Margill* decision⁴⁴¹ sets the basic foundation, “the appellants' refusal to provide basic information by relying on national copyright provisions thus prevented the appearance of a new product, a comprehensive weekly guide to television programmes, which the appellants did not offer and for which there was a potential consumer demand. Such refusal constitutes an abuse under heading (b) of the second paragraph of Article 86 of the Treaty”.⁴⁴²

The general policy of applying the essential facility doctrine formed in *IMS* was finally extended to IP markets despite the criticism that it received.⁴⁴³ In *IMS Health GmbH v. NDC Health GmbH*,⁴⁴⁴ the court held that “as is clear from that case-law (the Magill decision), exercise of an exclusive right by the owner may, in exceptional circumstances, involve abusive conduct”.⁴⁴⁵ In the judgement three constitutional exceptional circumstances were described: 1. preventing the emergence of a new product; 2. the refusal is not justified by objective considerations; 3. the likelihood of excluding all competition on a secondary market.⁴⁴⁶

⁴³⁹ Herbert Hovenkamp, Mark D. Janis & Mark A. Lemley, *Unilateral Refusals to License*, 2 J. Comp L. & Econ. 1 p 42 (2006).

⁴⁴⁰ Richard Whish, David Bailey, *Competition Law*, (Oxford University Press, 7 edition March 21, 2012).

⁴⁴¹ Cases C-241/91 P and C-242/91 P; *Radio Telefils Eireann (RTE) and Independent. Televisions Publications Ltd (ITP) v. Commission*. [1995] ECR I-743.

⁴⁴² Cases C-241/91 P and C-242/91 P; *Radio Telefils Eireann (RTE) and Independent. Televisions Publications Ltd (ITP) v. Commission*. [1995] ECR I-743. At paragraph 56, Citation omitted.

⁴⁴³ Lipsky, A. B., Sidak, G., *Essential facilities*, 51 Stan. L. Rev. 1187 p 1219 (1999); Léveque, F., *Innovation, leveraging and essential facilities: Interoperability licensing in the EU Microsoft case*, 28 W. Comp. 71 p 82 (2005); Hovenkamp, H., *IP ties and Microsoft's rule of reason*, 273 Antitrust Bull 47 pp 272 (2002); Cotter, T. F., *Intellectual property and the essential facilities doctrine*, 44 Antitrust Bull 211 p 214 (1999); Govaere, I., *In Pursuit of an Innovation Policy Rationate: Stakes and Limits under Article 82 TEC*, 31 W. Comp. 4 p 548 (2008); Sergio Baches Opi, *The Application of the Essential Facilities Doctrine to Intellectual Property Licensing in the European Union and the United States: Are Intellectual Property Rights Still Sacrosanct?* 11 Fordham Intell. Prop. Media & Ent L.J. 409 (2001); Valentine Korah, *The Interface between Intellectual Property and Antitrust: the European Experience*, 69 Antitrust L.J. 8013 (2002).

⁴⁴⁴ Case C-418/01 *IMS Health GmbH v. NDC Health GmbH*.

⁴⁴⁵ Case C-418/01 *IMS Health GmbH v. NDC Health GmbH*, at paragraph 37 Citation omitted.

⁴⁴⁶ Case C-418/01 *IMS Health GmbH v. NDC Health GmbH*, at paragraph 34-52.

5) The main findings of this part

Although IP can be used to hinder competition in a relevant market, the scope for competition law intervention in IP licensing is limited. Applying the essential facility doctrine as a competition policy to access IP is not well supported by IP law and may harm innovation competition. US and EU courts have in general taken different positions as to the application of the essential facility doctrine to IP.

B. LEVERAGING IP-BASED MARKET POWER

As analysed above, the application of the essential facility doctrine in compulsorily accessing IP goods in practise is in dispute, but this fact does not limit the liability in competition law for compulsorily accessing IP goods. Apart from the essential facility doctrine, when an IP good is abused for monopolising a market or for maintaining market dominance, the duty to license that granted by competition law becomes another way of accessing IP goods. Leveraging IP for maintaining and gaining dominance has been disapproved by the EU. In the Microsoft EU case, the European Commission held that Microsoft had abused its dominance by refusing to license interoperability information in the Workgroup server operating systems to its competitors. The decision imposed compulsory licensing.⁴⁴⁷

With regards the issue of compulsory licensing, there is often concern regarding whether the IP right will be harmed because the exclusive control of IP content lies at the heart of IP policy. However, viewing this issue from a competition perspective, there is also concern regarding whether competition in the market is protected, as the right to refuse to license can also eliminate competitors, which is one of the main concerns of competition law. Thus, a dilemma arises when granting mandatory licensing. According to case law on this dilemma, whether to grant compulsory licensing depends on different types of licensing relationships.

The first type of licensing relationship occurs in competition cases and explains the inherent right to refuse competitors the right to license, namely, the right is exclusive within the scope that covered by existing licensing contracts, not in the situations that beyond the scope; this type of licensing generally follows the opinion in the *Data General* (hereinafter, DG) decision.⁴⁴⁸ This decision demonstrates the principle that the IP owner's valid IP right cannot be an imposed duty to enter into new licensing so as to improve competition. In the case, DG is a computer manufacturer. In the market for the service of computers manufactured by DG, DG and Grumman are competitors, and their market shares are 90% and 3%, respectively. DG developed a sophisticated computer programme to diagnose problems in its MV computers. Grumman

⁴⁴⁷ These issues will be discussed in detail in Part III of this chapter.

⁴⁴⁸ *Data General Corp. v. Grumman Systems Support Corp.* 36 F.3d 1147 C.A.1 (Mass.), (1994).

used the computer programme to compete with DG in the service market, though DG did not license the software to Grumman previously. DG sued Grumman for copyright infringement. Grumman counter-claimed, first, that DG had licensed the diagnostic software to it and then discontinued the practise, and, second, that DG's discontinuation was aimed at excluding Grumman from the service market.⁴⁴⁹ For the first counter-claim, Judge Motz concluded that the Settlement Agreement did not require DG to license any proprietary information to CSSC⁴⁵⁰ or its customers, nor did the Settlement Agreement prevent DG from prohibiting CSSC from copying and using proprietary information in the custody of DG service customers. For the second counter-claim, the court concluded that it found no merit in Grumman's contention that DG acted in an exclusionary fashion in discontinuing its liberal policy that allowed TPM (third party maintainers) to access diagnostic software. Finally, the court concluded that no reasonable jury could find that DG's restrictions on third party maintainers' access to other service tools amounted to exclusionary conduct.⁴⁵¹

The second type of licensing relationship occurs within an existing licensing relationship. Case law demonstrates that when limiting an existing licence (mainly terminating it) serves as a facility to monopolise a market, such a practise may be liable for compulsory licensing under competition law. The legal source can be traced back to *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.* (hereinafter Aspen)⁴⁵² and *Miller Insituform, Inc. v. Insituform of North America, Inc.* (hereinafter Miller).⁴⁵³ Aspen is a refusal case related not to licensing but to a facility. Aspen Skiing Company is the owner of three out of four of the main facilities serving skiers who visited the resort. It discontinued its participation in a jointly offered interchangeable six-day 'all-Aspen' lift ticket. Aspen Skiing Company's discontinuation would not only harm skiers' convenience, it would also cause Aspen Highlands Skiing Corp to be eliminated from the market without the continuation strongly demanded by Aspen Highlands Skiing Corp. The court held that Aspen Skiing Company "had no valid business reason for discontinuing its participation in a jointly-offered interchangeable six-day 'all-Aspen' lift ticket, which provided convenience to skiers who visited the resort; thus, refusal of owner of the three areas to cooperate with its smaller competitor violated section 2 of the Sherman Act prohibiting monopolization or attempts to monopolize".⁴⁵⁴

A parallel analysis appeared in Miller but in the IP context⁴⁵⁵, defendant Insituform of North America (INA) was accused of unlawfully attempting to monopolise the relevant market by

⁴⁴⁹ *Data General Corp. v. Grumman Systems Support Corp.* 36 F.3d 1147 C.A.1 (Mass.), (1994), at I. Background.

⁴⁵⁰ Computer Systems Support Corporation, one of the defendants.

⁴⁵¹ *Data General Corp. v. Grumman Systems Support Corp.* 36 F.3d 1147 C.A.1 (Mass.), (1994), at III. B. Grumman's Antitrust Counterclaims.

⁴⁵² *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.* 472 U.S. 585, 105 S.Ct. 2847 U.S.Colo., (June 19, 1985).

⁴⁵³ *Miller Insituform, Inc. v. Insituform of North America, Inc.* 830 F.2d 606 C.A.6 (Tenn.), (1987).

⁴⁵⁴ *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.* 472 U.S. 585, 105 S.Ct. 2847 U.S.Colo., (June 19, 1985).

⁴⁵⁵ *Miller Insituform, Inc. v. Insituform of North America, Inc.* 830 F.2d 606 C.A.6 (Tenn.), (1987).

revoking plaintiffs' licenses to sell and instal a patented process for the rehabilitation of pipelines. The court believed that the termination did not violate Sherman Act and held that "the holder of a patent retains the power to exclude others from manufacturing, using, and selling his inventions without running afoul of the antitrust laws. Here, by terminating the sublicense agreement with the appellant, appellee merely exercised his power to exclude others from using the Insituform process, as was its right under 35 U.S.C. § 154 (US patent law)".⁴⁵⁶ The decision contradicts *Aspen* because the court found no antitrust harm: "we agree. There is no adverse effect on competition since, as a patent monopolist, INA, from the start, had exclusive right to manufacture, use, and sell his invention".⁴⁵⁷ However, the reason for the lack of antitrust harm is that INA had no vertically integrated firm in the market in which the licensee operates, and therefore had no competitive relationship. If INA also competed in the licensee's market, then the final judgement would be different.

The principle that the discontinuation of licensing may be liable for compulsory licensing, after being developed in *Aspen* and *Miller*, was finally formed in *Image Technical Services, Inc. v. Eastman Kodak Co.* (hereinafter *Image Technical*)⁴⁵⁸ and was followed by *United States v. Microsoft Corp.*⁴⁵⁹ In *Image Technical*, Eastman Kodak produced and offered services for the Kodak photocopier and micrographic parts. Apart from Eastman Kodak, there were eleven competitors (hereinafter ISOs) in the service market. As the ISOs grew more competitive, Kodak began restricting access to its photocopier and micrographic parts. In 1985 it stopped selling copier parts to ISOs, and in 1986 it halted the sales of micrographic parts to ISOs. In addition, it secured agreements from the ISOs' contracted original-equipment manufacturers not to sell parts to them. These parts limitations restrained the ISOs' ability to compete in the service market for Kodak machines because such competition requires that the service providers have ready access to all parts. In 1987 the ISOs filed their action against Kodak, seeking damages and injunctive relief for violations of the Sherman Act. They claimed that Kodak "monopolised or attempted to monopolise the sale of service for Kodak machines in violation of § 2 of the Sherman Act".⁴⁶⁰ The court held that Kodak has no justified business reason for its eliminative practises and finally found that "Kodak used its monopoly on parts, including patented and copyrighted products, to monopolize the service market".⁴⁶¹

⁴⁵⁶ *Miller Insituform, Inc. v Insituform of North America, Inc.* 830 F.2d 606 C.A.6 (Tenn.), (1987), at 609-610.

⁴⁵⁷ *Miller Insituform, Inc. v Insituform of North America, Inc.* 830 F.2d 606 C.A.6 (Tenn.), (1987), at III [1] [2] [3].

⁴⁵⁸ *Image Technical Services, Inc. v. Eastman Kodak Co.* 125 F.3d 1195 C.A.9 (Cal.), (1997).

⁴⁵⁹ *U.S. v. Microsoft Corp.* 87 F.Supp.2d 30 D.D.C., (2000).

⁴⁶⁰ *Image Technical Services, Inc. v. Eastman Kodak Co.* 125 F.3d 1195 C.A.9 (Cal.), (1997). at I.

⁴⁶¹ *Image Technical Services, Inc. v. Eastman Kodak Co.* 125 F.3d 1195 C.A.9 (Cal.), (1997). At VI [39] [40].

The principles formed in the decision were applied in *United States v. Microsoft Corp.*,⁴⁶² and both decisions cited *Aspen*. In the *Microsoft* decision⁴⁶³, Microsoft was granted compulsory disclosure duty for its discontinuation of disclosure of the interoperability information of its platform software Windows, an action which was aimed at eliminating competing market players in the application market (we will return to this in part III below).

One potential complementary effect of the compulsory disclosure remedy is that the licensor's licensing practises are largely restricted by existing licensing contracts. This effect has been analysed by some scholars: "intellectual property licenses are generally quite complex and they often involve technologies and markets that change rapidly. Locking companies into existing business relationships seems particularly inappropriate in fast-changing markets. Intellectual property licenses are often exclusive, in whole or in part; locking in relationships in such a context may prevent competition by other potential licensees down the road. Further, as a general matter antitrust law wants to encourage the licensing of intellectual property, since the alternative may be monopoly or at least more centralized control over production. Forcing companies to continue an existing license relationship may have the perverse effect of discouraging them from licensing their intellectual property rights in the first place. In short, we think it would be a mistake to depart from the presumptions that protect unilateral refusals to license merely because the parties had had a relationship in the past".⁴⁶⁴ However, the concern is unnecessary, as evidenced by previous case law; competition liability was granted only when the proposed licensing created an anticompetitive effect and made no contribution to IP rights. Compulsory disclosure is only an ex post remedy: its function is to ensure that competition and innovation are not lessened by inefficient practises. Compulsory disclosure as a competition remedy is different from IP policy-making, which should be based on emphasising and foreseeing the benefits and possible adverse effects ex ante. A discontinuation of disclosure of software interoperability information can harm competition, innovation and consumer welfare immediately, but it takes time to observe the efficiency elements or results. Moreover, the dynamic character of the market is vague, and there is thus no standard for assessing the harm to the dynamic of a market. As a result, the concern about affecting software suppliers' incentive to disclose is not necessary.

B. COMPULSORY DISCLOSURE OF SOFTWARE INTEROPERABILITY INFORMATION

Software interoperability information is one type of IP. It is developed using the same method as other parts of a software platform, and the parts are internally and functionally connected.

⁴⁶² *U.S. v Microsoft Corp.* 87 F.Supp.2d 30 D.D.C., (2000).

⁴⁶³ *U.S. v Microsoft Corp.* 87 F.Supp.2d 30 D.D.C., (2000).

⁴⁶⁴ *U.S. v Microsoft Corp.* 87 F.Supp.2d 30 D.D.C., (2000), at 29-30.

According to copyright policy and competition policy, software interoperability information is treated differently from other parts of the software. However, the treatment of software interoperability information is not inherently different; the current policy is the result of a policy evolution that occurred in the 1990s.⁴⁶⁵

1. SOFTWARE INTEROPERABILITY INFORMATION DISCLOSURE BEFORE 1990S

Software interoperability information disclosure was different before the 1990s largely because software is an innovation product and the software market was emerging at this time. Software emerged in 1955,⁴⁶⁶ and until 1976 it was treated as a type of literary work and was therefore protected by copyright law.⁴⁶⁷

Soon after the legal status of software was established in the US, software interoperability appeared in litigation as a defence. It has not been fully accepted, however. In *Apple Computer v. Franklin*,⁴⁶⁸ defendant Franklin designed an 'Apple compatible' software. "Franklin's copying of Apple's operating system computer programs in an effort to achieve such compatibility precipitated this suit".⁴⁶⁹ The Court of Appeals for the Third Circuit held: "Franklin may wish to achieve total compatibility with independently developed application programs written for the Apple II, but that is a commercial and competitive objective which does not enter into the somewhat metaphysical issue of whether particular ideas and expressions have merged".⁴⁷⁰ This case reflects the fact that the competition's opinion had not been included in the judge's consideration, and hence it was treated precisely as copyright infringement at this stage.

In the same period the emulation of software interoperability information was decided to be illegal. In *Whelan Associates, Inc. v. Jaslow Dental Laboratory, Inc.*,⁴⁷¹ the Circuit Judge Becker of the Court of Appeals held that: "copyright protection of computer programs could extend beyond programs' literal code to their structure, sequence, and organization".⁴⁷²

⁴⁶⁵ *Sega Enterprises Ltd* 785 F.Supp. 1392 N.D.Cal. (1992); *Computer Associates Intern., Inc. v. Altai, Inc.* 775 F. Supp. 544 E.D.N.Y., (1991).

⁴⁶⁶ Kubie, E.C., *Recollections of the first software company*, 16, IEEE Annals of the History of Computing 2 p 65 (1994). (Computer Usage Company (CUC), the world's first computer software company, was founded by John W. Sheldon and me in March 1955).

⁴⁶⁷ US legislation: *Copyright Act of 1976*, Pub. L. No. 94-553, 90 Stat. 2541. Sec. 117. // 17 USC 117. // Scope of exclusive rights: Use in conjunction with computers and similar information systems Notwithstanding the provisions of sections 106 through 116 and 118, this title does not afford to the owner of copyright in a work any greater or lesser rights with respect to the use of the work in conjunction with automatic systems capable of storing, processing, retrieving, or transferring information, or in conjunction with any similar device, machine, or process, than those afforded to works under the law, whether title 17 or the common law or statutes of a State, in effect on December 31, 1977, as held applicable and construed by a court in an action brought under this title.

⁴⁶⁸ *Apple Computer, Inc. v. Franklin Computer Corp.* 714 F.2d 1240 C.A.Pa.,(1983).

⁴⁶⁹ *Apple Computer, Inc. v. Franklin Computer Corp.* 714 F.2d 1240 C.A.Pa.,(1983), at II.

⁴⁷⁰ *Apple Computer, Inc. v. Franklin Computer Corp.* 714 F.2d 1240 C.A.Pa.,(1983), at [1] [2], [9].

⁴⁷¹ *Whelan Associates, Inc. v. Jaslow Dental Laboratory, Inc.* 797 F.2d 1222 C.A.3 (Pa.), (1986).

⁴⁷² *Whelan Associates, Inc. v. Jaslow Dental Laboratory, Inc.* 797 F.2d 1222 C.A.3 (Pa.), (1986).

During the US progression on software interoperability information disclosure, the EU's relevant policy-making came under discussion and the attitudes towards reverse engineering and the scope of protecting software interfaces were not established. The manifest position from EU legislators appeared to be that they objected to reverse engineering and believed copyright protection should extend beyond the expression part of the software. In 1989 the European Commission issued a proposal for a Directive.⁴⁷³ The proposal implied that under some circumstances a programme's interface specifications could not lawfully be used by persons other than the programme's developer. Furthermore, it incorporated an expansive prohibition on reproduction without an exception that would allow for reverse analysis⁴⁷⁴.

2. THE CURRENT STATUS OF SOFTWARE INTEROPERABILITY INFORMATION DISCLOSURE

In the 1990s the policy on software interoperability information disclosure changed. After the EU legislatively confirmed that copyright protection did not extend to the conceptual portion of software interoperability information and legalised the reverse engineering of software interoperability information, the US adopted the same policy through a number of cases. Finally, both the EU and the US approved the compulsory disclosure of software interoperability information.

In 1991 the EU enacted a Software Directive.⁴⁷⁵ This emphasises that the ideas in software interoperability information are not protected by copyright: “..... (2). Protection in accordance with this Directive shall apply to the expression in any form of a computer program. Ideas and principles which underlie any element of a computer program, including those which underlie its interfaces, are not protected by copyright under this Directive”.⁴⁷⁶ The directive also affirms that reverse engineering the interoperability information of software with the aim of achieving interoperability is legal: “Article 6 Decompilation: The authorisation of the right holder shall not be required where reproduction of the code and translation of its form within the meaning of points (a) and (b) of Article 4(1) are indispensable to obtain the information necessary to achieve the interoperability of an independently created computer program with other programs, provided that the following conditions are met: a) those acts are performed by the licensee or by another person having a right to use a copy of a program, or on their behalf by a person authorised to do so;

⁴⁷³ *Proposal for a Council Directive on the Legal Protection of Computer Programs*, 1989 O.J. (C 91) 4 (citing Palmer, Alan K.; Vinje, Thomas C. *The EC Directive on the Legal Protection of Computer Software: New law governing software development*, 2 Duke J. Comp. & Int'l L. 65 (1992).

⁴⁷⁴ Palmer, Alan K.; Vinje, Thomas C, *The EC Directive on the Legal Protection of Computer Software: New law governing software development*, 2 Duke J. Comp. & Int'l L. 65 p 68 (1992).

⁴⁷⁵ Council Directive 91/250/EEC of 14 May 1991 on the legal protection of computer programs. It is replaced by Directive 2009/24/EC of the European Parliament and of the Council of 23 April 2009 on the legal protection of computer programs.

⁴⁷⁶ Council Directive 91/250/EEC of 14 May 1991 on the legal protection of computer programs. at Article 1 Object of protection.

b) the information necessary to achieve interoperability has not previously been readily available to the persons referred to in point (a); and

c) those acts are confined to the parts of the original program which are necessary in order to achieve interoperability”.⁴⁷⁷

The literature reveals that the drafting of the directive was based on both copyright and competition considerations, and was aimed at promoting interoperability, which, in turn stimulates competition and innovation. Furthermore, this directive offers theoretical foundations for the compulsory disclosure of software interoperability information. The reasoning is as follows. Software interoperability information can be unprivileged for reasons of competition and innovation, and this compulsory disclosure is reasonable and should be approved by law.

Under European understanding and practise, compulsory disclosure has prevailed in the European courts, both in competition law agencies and in the courts.⁴⁷⁸ After *IMS* and *Magill*, in 2007 the Court of First Instance (Grand Chamber) approved the fine and duty to disclose interoperability information imposed against Microsoft by the Commission in 2004 for Microsoft’s refusal to disclose interoperability information.⁴⁷⁹ The relevant reasons are as follows: (1) the indispensable nature of the interoperability information; (2) the elimination of competition; (3) the new product; and (4) the absence of objective justification.⁴⁸⁰ Following the 2007 decision, the Belgian Competition Council adopted similar reasoning in imposing compulsory disclosure. In *CRM/Portina*,⁴⁸¹ it ordered an ICT company to disclose proprietary information over its electronic network. The reasoning of the order was: “Portima’s refusal to disclose technical specifications hindered or even prevented the compatibility of mastering softwares other than BRIO with AS/2. This refusal is preventing the emergence of a new similar product for which there is a potential demand by the insurance brokers.....rival mastering softwares were being technically foreclosed from the market and competition on a secondary market was eliminated,.....”⁴⁸²

⁴⁷⁷ Council Directive 91/250/EEC of 14 May 1991 on the legal protection of computer programs. It is replaced by Directive 2009/24/EC of the European Parliament and of the Council of 23 April 2009 on the legal protection of computer programs. At Article 6 Decompilation1. (c).

⁴⁷⁸ Case T-201/04 *Microsoft Corp. v Commission of the European Communities*; Belgian Competition Council (Raad voor de Mededinging), 14 February 14, 2007, Decision 2007-V/M-07, *NV Computer Resource Management - DEV - NV Computer Resource Management - TEC / CVBA Portima*, Case MEDE-V/M-03/0060; French Competition Council (Conseil de la concurrence), 25 February 2008, Decision n° 08-D-04 regarding conduct of Nouvelles Messageries de la Presse Parisienne.

⁴⁷⁹ Order of the President of the Court of First Instance of 26 July 2004. *Microsoft Corp. v Commission of the European Communities* [2004] ECR II-2977.

⁴⁸⁰ European Court of First Instance in Case T-201/04, *Microsoft Corporation v. Commission of the European Communities* (Sept. 17. 2007) At findings of the court.

⁴⁸¹ Belgian Competition Council (Raad voor de Mededinging), 14 February 14, 2007, Decision 2007-V/M-07, *NV Computer Resource Management - DEV - NV Computer Resource Management - TEC / CVBA Portima*, Case MEDE-V/M-03/0060.

⁴⁸² Similar decision please see a French case: French Competition Council (Conseil de la concurrence), 25 February 2008, *Decision n° 08-D-04 regarding conduct of Nouvelles Messageries de la Presse Parisienne*.

The evolution of the legal rule in the US is in contrast with that seen in the EU. After the EU's Software Directive, the US courts responded quickly. Together with criticism of the strong protection that appeared in cases before the 1990s, in 1992 two cases confirmed that copyright protection does not extend to the interface and approved reverse engineering as being legal. In *Computer Associates Intern., Inc. v. Altai, Inc.*,⁴⁸³ the District Court held that: "rewritten compatibility component in computer program was not substantially similar to copyrighted component and, therefore, did not infringe it".⁴⁸⁴ In *Sega Enterprises Ltd v. Accolade, Inc.*,⁴⁸⁵ "on manufacturer's motion for preliminary injunction, the District Court, Caulfield, J., held that: manufacturer was entitled to preliminarily enjoin competitor from developing, manufacturing, shipping, distributing or selling any video game programs that were compatible on manufacturer's game consoles".⁴⁸⁶

However, in contrast to the situation in the EU market, case law reasoning did not give a legal foundation for the compulsory disclosure of software interoperability information in the US. This difference appeared in the Microsoft decision⁴⁸⁷: "to the extent that Microsoft still asserts a copyright defense, relying upon federal copyright law as a justification for its various restrictions on original equipment manufacturers (hereinafter OEMs), that defense neither explains nor operates to immunize Microsoft's conduct under the Sherman Act".⁴⁸⁸ Apparently, under US court treatment, the refusal to disclose software interoperability information is identified as an attempted monopolisation practise, not as an essential facility abuse. Further, the controversial legal status of software interoperability information in the 1990s indicates that a major policy reversal occurred in the US. Though the reasons for the policy reversals in the EU and the US differ, both led to the same verdict: the unfavorable treatment of software interoperability information.

After the policy reversal, while the refusal to disclose software interoperability information has received unfavourable treatment in the courts, a number of scholars hold an even more radical opinion.⁴⁸⁹ Some hold that software interoperability information should be open to the

⁴⁸³ *Computer Associates Intern., Inc. v. Altai, Inc.* 775 F. Supp. 544 E.D.N.Y., (1991).

⁴⁸⁴ Decision on copyright protection does not extend to interface was reaffirmed in appeal decision. *Computer Associates Intern., Inc. v. Altai, Inc.* 982 F.2d 693 C.A.2 (N.Y.), (1992). (The Court of Appeals, Walker, Circuit Judge, held that: (1) nonliteral elements of compatibility component of rewritten computer program were not substantially similar to copyrighted work; (2) use of expert evidence in determining substantial similarity between computer programs was not error...)

⁴⁸⁵ *Sega Enterprises Ltd* 785 F.Supp. 1392 N.D.Cal. (1992).

⁴⁸⁶ Decision on reverse engineering of computer program code and fair and non-infringing use was reaffirmed in appeal decision. *Sega Enterprises Ltd. v. Accolade, Inc.* 977 F.2d 1510 C.A.9 (Cal.), (1992). (The Court of Appeals, Reinhardt, Circuit Judge, held that: (1) use of copyrighted computer work to gain understanding of unprotected functional elements was fair use of copyrighted work...).

⁴⁸⁷ *U.S. v Microsoft Corp.* 87 F.Supp.2d 30 D.D.C., (2000), (conclusion of law) at ii.

⁴⁸⁸ *U.S. v Microsoft Corp.* 87 F.Supp.2d 30 D.D.C., (2000). Citation omitted.

⁴⁸⁹ Ulla-Maija Mylly, *An evolutionary economics perspective on computer program interoperability and copyright*, 41IIC (3) pp 284-315 (2010). (As interoperability information holds a key position in the software industry, these rules are of paramount importance. From the perspective of evolutionary

public, regardless of the difference between public and private standards,⁴⁹⁰ which is far from appropriate. Under a public standard, no other standards are interested in replacing it, and all customers must use this standard. This situation has two consequences. Firstly, no one will invest in and innovate on standards other than the public standard, and therefore, the public standard is under no pressure to be replaced by a new standard. Secondly, the public standard should disclose its interoperability information to all interested parties; in other words, the interoperability information of a public standard should also be public.

In contrast, private dominant standards are de facto standards formed by consumer choice, and this type of market dominance is different to the dominance of a public standard. Firstly, any new standard is allowed to compete against and potentially replace the de facto standard, and thus, there is competition pressure for the de facto standard, as consumers have other choices. Secondly, because of the first point, the de facto standard has no obligation to publicise its interoperability information, particularly to competitors. If there is compulsory disclosure, it is disadvantageous to competition in the market and innovation; meanwhile, it also potentially gives competitors a free ride (see Part III immediately below).

economics, there should not be strong monopoly rights for bottleneck technologies, rather possible intellectual property rights should only provide narrow protection for such elements in a system technology. The reason for this is that one actor should not alone decide a direction for future innovations in system or cumulative technologies. Due to bounded rationality, one actor is unable to fully see all the possibilities of innovation. If intellectual property protection, and the protection of the interfaces in particular, are strong, the legal rules are inefficient since all technological possibilities will not be utilized. The legal rules need to enable a broader scope of the trial-error-correction procedure. Access to interoperability information lowers the barriers for new firms to enter into software markets. From the perspective of evolutionary economics, the existence of new firms is of paramount importance for radical innovations to take place. It is the new entrant firms with a sufficient amount of new technology users that provide a competitive pressure for technological paradigms to change; Pamela Samuelson, The past, present and future of software copyright: interoperability rules in the European Union and United States. *E.I.P.R.* 2012, 34(4), 229-236. Adoption of the Software Directive in 1991 brought considerable stability to the legal protections for computer programs in the European Union, just as Altai and Sega brought similar stability to US software copyright law. The pro-interoperability rules of both jurisdictions have contributed to the phenomenal growth of this industry, allowing new entrants to the market for complementary and competing products. Consumers have benefited considerably from the availability of a wide range of interoperable information technologies). More related literature please: Urs Gasser and John Palfrey, *Breaking down Digital Barriers: When and How ICT Interoperability Drives Innovation* (2007) <http://cyber.law.harvard.edu/interop/pdfs/interop-breaking-barriers.pdf>.

⁴⁹⁰ WR Cornish proposed going further and requiring that all interoperability information be put into the public domain (Kevin Coates, *Competition Law and Regulation of Technology Markets*, p 238 (Oxford University Press, 2011). European Commissioner for the Digital agenda (and former Competition Commissioner) Neelie Kroes conveys in order to facilitate interoperability between different products and services turn all standard into public is efficient and suggests legislation: More transparency in formal standard-setting can lead to more efficient outcomes... I am still a big fan of open standards. I believe in openness, and I believe in practicing what one preaches. Some observers think "open standards" is a tainted term that should not to be used in the absence of a generally recognised definition. Others act as if a policy document that does not mention "open standards" would automatically lack merit. My position is in between... Some standard-setting bodies already have ex-ante disclosure rules, so why not all of them? This is a matter of efficiency in my opinion. And surely, as a matter of effectiveness, when the Commission mandates standards bodies to draw up a standard it should have the right to be more demanding on the standardization process, to ensure that standards are less demanding when it comes to their adoption. We could also think about enticing other standards bodies to adopt such rules, for example by giving their outputs preferential treatment when approving them as European standards. Finally, why not tie the public financing of standards bodies to the existence of good ex-ante rules?

The comparison between public and private standards suggests that private standard information should not be subject to compulsory disclosure in both the US and the EU. This is because innovation incentives and vibrant competition need to be maintained.

III. SOFTWARE INTEROPERABILITY INFORMATION DISCLOSURE AND ITS COMPETITION EFFECT

The current policy is prone to imposing compulsory disclosure; it facilitates easy access to interoperability information. This policy aims at stimulating investment in downstream market software development and competition between these software applications, it ultimately enables consumers to gain access to more software products and also perhaps to lower prices. However, according to the competition in the software market, this policy is biased: its benefits are at the expense of upstream or platform software innovation and competition, and it in turn hurts the consumer in the long run.

A. COMPULSORY DISCLOSURE OF SOFTWARE INTEROPERABILITY INFORMATION AND ITS EFFECT ON COMPETITION IN THE SOFTWARE MARKET

The biased copyright policy not only harms innovation in the upstream market, it also distorts competition in the same market. This aftermath is a reflection of the fact that the function of interoperability information has not been fully understood by legislators and that there also appears to be no clear comprehension of competition in the software market.

The current prevailing understanding of interoperability information is that it is a facility or technical matter aimed at creating a bottleneck to control competition in the downstream market.⁴⁹¹ However, this perspective fails to stand up to scrutiny. The most evident proof is that many firms voluntarily disclose their interoperability information.⁴⁹² This voluntary disclosure

⁴⁹¹ Dermot Nolan, *Bottlenecks in Pay Television, Impact on Market Developments in Europe*, 21 Telecomm. Pol'y. 597 (1997); Robert P. Merges, *Intellectual Property Rights and New Institutional Economics*, 53 Vand. L. Rev. 1857 pp 1863-1684 (2000); Donna Patterson, Robert Pitofsky and Jonathan Hooks, *The Essential Facilities Doctrine Under United States Antitrust Law*, 70 Antitrust L.J. 443 pp 443-462 (2002); Ulla-Maija Mylly, *An evolutionary economics perspective on computer program interoperability and copyright*, 41 IIC (3) pp 284-315 (2010); Eliza Varney, *Winners and Losers in the Communications Sector: An Examination of Digital Television in the United Kingdom Minnesota*, 6 Minn. J.L.Sci.&Tech.645 (2005); Jay Pil Choi, *Compulsory licensing as an antitrust remedy*, 2 W.I.P.O.J. (1) pp 74-81 (2010); For case study please see: *Otter Tail Power Co. v. United States*, 410 U.S. 366 (1973); *United States v. Terminal R.R. Ass'n*, 224 U.S. 383 (1912); *MCI Communications Corp. v. AT&T*, 708 F.2d 1081, 1132 (7th Cir. 1982).

⁴⁹² Torsten J. Gerpott, Sandra E. Thomas, Alexander P. Hoffmann, *Intangible asset disclosure in the telecommunications industry*, 9 Journal of Intellectual Capital 1 p 48 (2008). (The possibility to use material already produced for other purposes, coupled with public social responsibility pressures on large TNOs, could be major reasons to explain the relatively high disclosure quality concerning human capital. The low innovation capital disclosure qualities in both annual reports and on websites may be an outcome of the low R&D intensity of TNOs "delegating" most of their technical development work to their network vendors (cf. Gerpott, 2006) and the high degree of network standardization across TNOs due to interoperability reasons). Similar literature please see: D. Remenyi(edite) *Proceedings of the 5th European Conference on e-Government (ECEG 2005)* at 2.2.2 Voluntary supplier-led standards580-583; Ioannis Kokkoris, Ioannis. Lianos (edite), *The Reform of EC Competition Law: New Challenges*, p 337 (Kluwer Law International, 2010).

promotes innovation and competition in the secondary markets. Moreover, it is a very popular market operation in competition in the network product market.

The nature of network competition within the software market is highly important. Interoperability information is a competition facility and an advantage in enlarging network in relevant market. The currently unfavourable interoperability information policy is alleged to achieve two goals: promotion of the number and quality of downstream software products, which stimulates innovation investment; and beneficial outcomes for consumers by allowing them access to more high-quality software products. However, these alleged achievements are based on the sacrifice of the platform software (or primary software), and this is a critical consideration. Platform software also experiences innovation pressure when competing in its software market, and so the incentives for innovation need to be maintained. The compulsory disclosure of interoperability information is harmful to this motivation. Interoperability information is developed and provided by the platform software developer to support application software, it is an indispensable part of a platform software. Under market mechanisms, the developer is allowed to recover their investment and profits. Interoperability information, as a property of the platform software owner, also contributes to cost recovery and profits. It is indispensable for maintaining the incentive to continue to invest and innovate. However current policy places software interoperability information in an unfavoured situation. Therefore, it reduces the source of profits for the platform software owner, and as a complementary result of the injured platform software and platform software market, competition and innovation in the application software market will also be badly undermined.

Software interoperability information as a competitive advantage also benefits market participants in that it avoids free-riding harm. Through the competition process, one product acquires the highest amount of consumers, and an increasing number of consumers are then attracted by this large network. At the same time, if the main network product has secondary markets, then enlarging the secondary markets contributes indirectly to enlarging the primary network. Yet although interoperability is so useful a competitive advantage in the primary market in attracting secondary market consumers, the current non-favour policy against interoperability information directly forbids the possession of this competitive advantage. It not only prevents the primary network from obtaining consumers from secondary markets, it also gives a free ride to either primary market competitors or secondary market competitors. This free-ride function does not apply to additional services or product promotion but instead to the competitor's competitive advantage, namely interoperability information. Interoperability information requires financial investment to develop, maintain and upgrade, and these expenses are all paid by the primary software supplier. Compulsory disclosure allows competitors a free ride on this information because the primary market competitors can use the interoperability information to

attract consumers from the primary network, which is vital for the primary network. This aftermath demonstrates that the current non-favour policy ultimately harms the primary market competitor and benefits secondary competitors, which is far from the purpose of competition law – protecting competition, not specific competitors.

In addition to the function of interoperability information in competing in the network market, the competitive structure of the network market should also be examined. As analysed above, the competitive relationship in a single-product market is different from the competitive relationship in other market structures. The software market is a market with various different structures, single-product markets, two-sided markets, and multi-sided markets, which pose different competitive characters and thus deserve separate competitive considerations. The software products related to interoperability problems are typically engaged in the primary and secondary markets. This vertically related two-market structure poses a unique character under competition analysis.⁴⁹³

As proven by case law, all compulsory disclosure of interoperability information has occurred in vertically integrated primary and secondary markets.⁴⁹⁴ Every one of these decisions is all against dominant software firms, whereas no non-dominant firm has been obligated to disclose its interoperability information. Under compulsory disclosure, this situation is unfair for the dominant platform software supplier in competition with non-dominant firms, because competitors of the dominant firm do not invest in innovating the interoperability information: they only use it freely or even compete with the dominant firm that offers it. This is only one kind of market structure. There are two others: some software firms only compete in the platform software market, whereas other firms own platform software but compete only in the downstream markets. These different situations pose different competitive environments that offer good reasons for examining the compulsory licensing policy.

For the first situation, where a market player only participates in the platform market, it has no interest in concealing interoperability information. On the contrary, the route to maximise profit is to voluntarily disclose the interoperability information because this disclosure is the best way to enlarge its network; therefore, there will be no compulsory disclosure problem. For the second situation – market players who own a platform but only compete in the downstream

⁴⁹³ European Commission Decision of 24 May 2004 relating to a proceeding pursuant to Article 82 of the EC Treaty and Article 54 of the EEA Agreement against Microsoft Corporation (Case COMP/C-3/37.792 — Microsoft). Available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:032:0024:0024:EN:PDF>. Case T-201/04 Microsoft Corp. v Commission of the European Communities.

⁴⁹⁴ European Commission Decision of 24 May 2004 relating to a proceeding pursuant to Article 82 of the EC Treaty and Article 54 of the EEA Agreement against Microsoft Corporation (Case COMP/C-3/37.792 — Microsoft). Available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:032:0024:0024:EN:PDF>. Case T-201/04 Microsoft Corp. v Commission of the European Communities.

market – interoperability information is vital in order for them to compete in the downstream market. In this situation, the interoperability information is a competitive advantage for the platform software. Compulsory disclosure allows competitors to share this advantage and save on investment in developing application platforms. In the end, competition and innovation in both markets will be harmed.

The last situation is more complicated. Here competitors compete in two vertically related markets, and face competitors from both the application and platform markets. The compulsory disclosure of interoperability information, as analysed previously, helps both application market rivals and platform market rivals. For the extreme situation in which there are firms that compete with the dominant firm in both the upstream and downstream markets, they can directly benefit from this policy and obtain a competitive advantage. With such a danger, a software firms' incentive to compete and innovate is dampened considerably.

B. CONSUMER WELFARE AFFECTED BY THE COMPULSORY DISCLOSURE OF SOFTWARE INTEROPERABILITY INFORMATION

In case law, courts in the EU treat consumer welfare as an important factor when considering the compulsory disclosure of interoperability information.⁴⁹⁵ This consideration is because consumer welfare will ultimately be affected under most exclusive practises, whereas in the case of licensing software, in addition to the long-run welfare effect, a short-run welfare effect is manifest. In the *Microsoft EU* case,⁴⁹⁶ consumer welfare is one of the major concerns under court analysis: “there is no doubt that consumers place great significance on the fact that computer programs are interoperable with the quasi-monopolistic products represented by Windows client PC operating systems”⁴⁹⁷; “the Commission observes that in Microsoft's argument cannot be accepted, as that criterion must be assessed against the aim of preserving an effective competitive structure that benefits consumers”.⁴⁹⁸ These analyses are based on the structural and competitive status of the application software market, in which short-term welfare may be greatly affected by the availability of interoperability.

It is true that consumers may benefit from this policy in the short term and within a certain scope, which enables them to have more access to software products. As introduced previously, the compulsory disclosure policy therefore has a vast audience. After a compulsory disclosure, competing application software may appear, which offers consumers either more choice or a lower price. Moreover, because the interoperability information can also be used on rival

⁴⁹⁵ This was reflected in the *Microsoft* cases in the EU and US.

⁴⁹⁶ Case T-201/04 *Microsoft Corp. v Commission of the European Communities*.

⁴⁹⁷ Case T-201/04 *Microsoft Corp. v Commission of the European Communities*, at paragraph 149.

⁴⁹⁸ Case T-201/04 *Microsoft Corp. v Commission of the European Communities*, at paragraph 355.

platform software, consumers can also switch to a different platform software without spending more money. This type of cost saving by switching is also desired by consumers.

However, although the policy that supports the compulsory disclosure of software interoperability information is based on considerations for promoting consumer welfare, and although it is enforced with good intentions, the alleged consumer welfare actually harms consumers in the long run and within a broader scope. Because compulsory disclosure interoperability information harms upstream market players so as to benefit downstream market players, consumers have more choice only in the application software. Consumers may have fewer choices in the platform market, because no market player wants to invest in developing IP that is subject to compulsory licensing. After the competition and innovation incentive in the platform software market has been harmed, the application market will in turn be harmed. Finally, the important aim, consumer welfare, will be worse off under such a competition and innovation chilling policy.

As analysed previously, consumers play a unique role in market dominance and interoperability, and this is important in the network market. Consumers' choices form a network and also raise the switching cost. The cost generated by switching arises because consumers choose to switch; it is not associated with the platform software supplier, and it does not relate to a bottleneck effect on follow-on innovation and competition. Software interoperability information is one such cost; at the same time, it is also an indispensable competition advantage and facility. The compulsory disabling of this advantage harms platform product suppliers, destroys competition in the platform software market, and ultimately harms the consumer by preventing the development of advanced platform software. As a factual witness, the software market is a high-technology market, and competition in innovation in this market should be dynamic, as should be the dominant product. However, it is apparently not dynamic in the platform software market, for example, the computer operating system market. Microsoft as a platform software supplier has been a dominant firm for more than a decade.⁴⁹⁹ Although the market is apparently not dynamic – and this may not be directly related to compulsory disclosure interoperability information – Microsoft's investment in developing interoperability information, applications and intergrading products was sunk under the compulsory disclosure policy.

⁴⁹⁹ Microsoft's monopoly practises and dominant position abuse were recognised by US courts in the last decade of the 20th century, now Microsoft is still recognised to be the dominant firm in many software markets. Here are two cases that confirm Microsoft's dominance in different periods: 1. Case T-201/04 *Microsoft Corp. v Commission of the European Communities*. At paragraph 30. (In the contested decision, the Commission finds that Microsoft has had a dominant position on the client PC operating systems market since at least 1996...); 2. *MiniFrame Ltd. v. Microsoft Corp. Slip Copy*, 2013 WL 1385704 S.D.N.Y., (2013). MiniFrame finally asserts that Microsoft's pricing of its MPS multi-user software was predatory within the meaning of the antitrust laws. However, this claim too falls short. Predatory pricing occurs when 'a single firm, having a dominant share of the relevant market, cuts its prices in order to force competitors out of the market, or perhaps to deter potential entrants from coming in'.

Furthermore, after competition in the computer operating system software market is distorted, no more new operating system software based application software will be developed.

C. REVERSE ENGINEERING OF INTEROPERABILITY INFORMATION AND COMPETITION

As previous analysis shows, copyright and competition policy maintained the interoperability information in a non-favour status so as to promote competition in the downstream market, innovation and consumer welfare. However, the policy does not produce the desired effects; on the contrary, it results in unforeseen harm to innovation and competition. Thus, it is necessary to analyse whether there is a better or alternative policy. After compulsory disclosure is abandoned, competitors can no longer develop competing products easily or get a free ride, and competition in innovation in the primary market will be promoted. At the same time, the prevailing consideration may be that non-competing follow-on innovation will be hindered. However, this concern is unnecessary because there are two ways to promote non-competing follow-on innovation. The first way is through a disclosure licence. As a result of network effects, no platform software will reject disclosure to non-competing firms that develop programmes that help enlarge the platform user group. Follow-on innovation therefore will not be restrained through such licences. The second way is reverse engineering, through which follow-on innovation will also not be effected. In addition, competition against the platform software and related application software will be promoted.

Reverse engineering serves an important function within copyrighted product competition, particularly for competition within a network-featured market. The software market is just such a market. Its product – software – is an innovative work and is subject to copyright protection. If its interoperability information is not subject to compulsory disclosure, then competitor free-riding will be avoided. At the same time, competition in the downstream market will be lessened, and consumer choice will be limited. Reverse engineering acts to counter these potential negative effects. Under a de facto standard network, downstream competitors can only compete by reverse engineering the interoperability information. In this situation, where the interoperability information acts as a downstream market entry barrier, reverse engineering is a legitimate way of overcoming this barrier. Reverse engineering's function of accessing interoperability information can replace compulsory disclosure as a suitable and practical mechanism in order to stimulate downstream innovation, competition and consumer welfare. Under compulsory disclosure, upstream market innovation, competition and long-term consumer welfare are destroyed, whereas exempting interoperability information from compulsory disclosure may reduce competition in the downstream market and affect consumer welfare. Reverse engineering parts or all of a copyrighted software product as a mitigation is generally allowed by copyright law. In fact,

according to existing research, it is also unlikely to give rise to competition problems.⁵⁰⁰ The point presented here is that it offers a legitimate way for competitors to enter the downstream market, and also benefits consumers. Although reverse engineering may incur cost investment in the reverse engineering of interoperability information, this acts as the cost for market entry. It is a moderate way to balance competition and copyright, whereas compulsory disclosure is too radical.

D. REFUSALS TO DISCLOSE SOFTWARE INTEROPERABILITY INFORMATION AS ABUSE OF MARKET DOMINANCE THAT SUBJECT TO COMPULSORY DISCLOSURE

Compared to the essential facility approach for imposing a compulsory licence, which has considerable uncertainty, discontinuing the disclosure of software interoperability information possesses due competitive reasons to warrant compulsory disclosure, although it must be examined under certain circumstances. Refusals to continue to disclose software interoperability information typically occurs in a concentrated market, because if the market is not concentrated, market players will have more than one choice, and there will thus be no refusal-originated competition problems. In addition, in such a market, due to network competition, there must be a dominant software supplier that is the de facto supplier of the relevant market. Refusals to continue to disclose software interoperability information are likely to constitute market dominance abuse. However, because a software product is protected by copyright law's exclusive control and there is uncertainty regarding whether software interoperability information should be subject to compulsory disclosure, it costs effort to identify a discontinuation as dominance abuse.

1. MARKET CONDITION

It is useful to note that this study only considers the unilateral refusal of disclosure. To constitute such a refusal, the prerequisite is to obtain a dominant market position. In the software market, the dominant market position is a de facto industrial standard. The most famous example is the Microsoft Windows software platform, which is a dominant computer operating system. Its dominance and relevant large market share were defined in advance in all dominance abuse

⁵⁰⁰ Mindy J. Weichselbaum, *The EEC Directive on the Legal Protection of Computer Programs and U.S. Copyright Law: Should Copyright Law Permit Reverse Engineering of Computer Programs?* 14, *Fordham Int'l L.J.* 4 (1990). (The fear that larger software manufacturers will monopolize their strong market position is unwarranted. Prominent software manufacturers already publicly distribute the information needed to create interoperable programs. 2 8 Additionally, the third party author has numerous alternatives to decompiling that provide the information needed to create an interoperable program).

decisions involving it. In the *Microsoft* EU case⁵⁰¹: “the Commission finds that Microsoft has had a dominant position on the client PC operating systems market since at least 1996 and also on the work group server operating systems market since 2002. As regards the client PC operating systems market, the Commission relies essentially on the following factors to arrive at that conclusion:- Microsoft's market shares are over 90%”,⁵⁰² it far exceeds the minimum EU requirement for market dominance (40%).⁵⁰³ In the *Microsoft* US case,⁵⁰⁴ the US requirement for identifying market dominance is much higher: “fact that software company with 95% share of relevant personal computer (PC) operating system (OS) market..... Microsoft possesses a dominant, persistent, and increasing share of the worldwide market for Intel-compatible PC operating systems. Every year for the last decade, Microsoft's share of the market for Intel-compatible PC operating systems has stood above ninety percent”.⁵⁰⁵

2. REFUSALS TO DISCLOSE SOFTWARE INTEROPERABILITY INFORMATION AS AN ABUSE OF MARKET DOMINANCE

Although all refusals as an abuse of market dominance occurred in the above market background, even if a market fulfils the above structure, a refusal to disclose software interoperability information should not be prejudicially considered as an abuse because copyright is the right at issue, which grants an exclusive right of controlling the intellectual property, and competition law is helpless in this respect. The expression part of software interoperability information is one such type of intellectual property. In market operation, the disclosure of interoperability is flexible: some software suppliers only compete in the platform market, and they voluntarily disclose interoperability information to all firms interested in developing applications. Some firms restrict interoperability information to themselves in order to completely control the application market. Other firms disclose interoperability information to both themselves and rivals.

Regardless of how flexible the market strategy is, when a software copyright holder wishes to recover investment and gain profit from the market, it must obey market rules and thus obey the law that governs markets – competition law. Software interoperability information is one type of intellectual property, and so its disclosure should also obey competition law. Competition law generally protects innovation (and the motive to innovate) and consumer welfare and forbids the

⁵⁰¹ *Microsoft v. Commission* (T-201/04) [2007] E.C.R. II-3601.

⁵⁰² *Microsoft v Commission* (T-201/04) [2007] E.C.R. II-3601, at paragraph 30, 31 citation omitted. Similar situation also appear in: French Competition Council (Conseil de la concurrence), 25 February 2008, *Décision n° 08-D-04 regarding conduct of Nouvelles Messageries de la Presse Parisienne*; Belgian Competition Council (Raad voor de Mededinging), 14 February 14, 2007, *Decision 2007-V/M-07, NV Computer Resource Management - DEV - NV Computer Resource Management - TEC / CVBA Portima*, Case MEDE-V/M-03/0060.

⁵⁰³ European Commission decision 2000/74/EC of 14 July 1999, *Virgin/British Airways*, OJ L 30, 4.2.2000.

⁵⁰⁴ *United States v. Microsoft Corp.*, 84 F.Supp.2d 9 (D.D.C.1999) (Findings of Fact).

⁵⁰⁵ *United States v. Microsoft Corp.*, 84 F.Supp.2d 9 (D.D.C.1999) (Findings of Fact), at paragraph 35.

abuse of market power. If there is a dominant firm, competition law should intervene when interoperability is used to limit competition.

Despite the fact that software interoperability information is indispensable for connecting platform and applications and users, in market operation, it can easily be abused as a bottleneck to limit competition. A number of such cases have already appeared in the EU and US markets. The most typical is the Microsoft case series, in which Microsoft exclusively discontinued offering its software interoperability information to its application market competitors. In the *Microsoft* EU case,⁵⁰⁶ Microsoft was accused of withdrawing its interoperability information to exclude its competitor in the application market: “Microsoft’s refusal constitutes a disruption of previous levels of supply, since the analogous information for previous versions of Microsoft’s products had been made available to Sun and to the industry at large, indirectly through a licence to AT&T”.⁵⁰⁷ Microsoft brought this case to the Court of First Instance (Grand Chamber). The court held that “in the light of Article 82 EC, in order to enable developers of work group server operating systems competing with the dominant developer to remain viably on the market. Should it be established that the existing degree of interoperability does not enable those developers to remain viably on the market, it follows that the maintenance of effective competition on that market is being hindered”.⁵⁰⁸ It further noted that the judgement was made in exceptional circumstances because the decision finally granted a compulsory disclosure of interoperability information.⁵⁰⁹ In the *Microsoft* US case⁵¹⁰, Microsoft was accused of having engaged in a strategy of discontinuing the offer of interoperability information to its application market competitor, which was parallel to the abuse Microsoft practised in the EU. The interoperability information Microsoft withheld was a scripting tool that Netscape needed to make its browser compatible with certain dial-up internet service providers (ISPs), which had been licensed freely to Netscape and other ISPs.⁵¹¹

Comparatively speaking, the above Microsoft cases have one common feature: each of the interoperability information owners had disclosed the interoperability information to the public previously. Under competition analysis, in the situation in which the interoperability information

⁵⁰⁶ Case T-201/04 *Microsoft Corp. v Commission of the European Communities*.

⁵⁰⁷ European Commission Decision of 24 May 2004 relating to a proceeding pursuant to Article 82 of the EC Treaty and Article 54 of the EEA Agreement against Microsoft Corporation (Case COMP/C-3/37.792 — Microsoft). Available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:032:0024:0024:EN:PDF>.

⁵⁰⁸ Case T-201/04 *Microsoft Corp. v Commission of the European Communities*, at paragraph 4.

⁵⁰⁹ Case T-201/04 *Microsoft Corp. v Commission of the European Communities*, at paragraph 6. (The court explained the three elements: in the first place, the refusal relates to a product or service indispensable to the exercise of a particular activity on a neighbouring market; in the second place, the refusal is of such a kind as to exclude any effective competition on that neighbouring market; in the third place, the refusal prevents the appearance of a new product for which there is potential consumer demand).

⁵¹⁰ *United States v. Microsoft Corp.* 87 F.Supp.2d 30. (D.D.C., 2000).

⁵¹¹ *United States v Microsoft Corp.*, 84 F.Supp.2d 9 (D.D.C.1999) (Findings of Fact), at 92.

has not been disclosed previously, the interoperability information owner owns the right to refuse to disclose. Because from a competitive perspective, no application market has been formed, and thus, the competition rules are exempted. Where the interoperability information has previously been disclosed, it still owns the right to refuse the new disclosure request; however, once the supplier decides to discontinue disclosure, if the supplier discontinues only against rivals, then exclusion of rivals from this market will be a violation of competition law. As a complementary result of market elimination, consumer welfare is directly affected by a discontinuation, because consumers then will face a lessened application product and higher price. Thus, competition law intervention is required to protect consumer welfare and the established competition process from being lessened or destroyed.

3. REMEDY AND APPLICATION

Although compulsory disclosure has been proven to be an appropriate remedy against the discontinuation of disclosing software interoperability information, the remedy must still be applied properly, as there are different standards or bases for identifying whether a discontinuation of disclosure is subject to compulsory disclosure. There is also a problem with the scope of applying this remedy.

Two different bases of identifying whether a discontinuation of disclosure software interoperability information is subject to compulsory disclosure exist: the US basis and the EU basis.

Under the US framework of governing market power abuse, discontinuing the disclosure of software interoperability information is treated under Section 2 of the Sherman Act. It constitutes either an illegal maintenance of monopoly power or an attempt to monopolise a secondary market. In the *Microsoft* US case,⁵¹² in order to exclude the Netscape web browser software, Microsoft exercised various means, one such relevant strategy being as follows: “Microsoft licensed Internet Explorer and the Internet Explorer Access Kit to hundreds of Internet access providers (hereinafter IAPs) for no charge. Then, Microsoft extended valuable promotional treatment to the ten most important IAPs in exchange for their commitment to promote and distribute Internet Explorer and to exile Navigator from the desktop”.⁵¹³ This means was used to enhance market control via the Internet Explorer Access Kit, which is the embedded interoperability software. The use of the discontinuation of disclosure of interoperability information is the strategic use of discontinuation – the delayed disclosure: “Microsoft similarly withheld a scripting tool that Netscape needed to make its browser compatible with certain dial-up internet service providers (hereinafter ISPs). Microsoft had licensed the tool freely to ISPs

⁵¹² *United States v Microsoft Corp.*, 84 F.Supp.2d 9 (D.D.C.1999), at 250-306.

⁵¹³ *United States v Microsoft Corp.*, 84 F.Supp.2d 9 (D.D.C.1999) and; *United States v. Microsoft Corp.*, 87 F. Supp. 2d 30 (D.D.C. 2000) at ii.

that wanted it, and in fact had cooperated with Netscape in drafting a license agreement that, by mid-July 1996, needed only to be signed by an authorized Microsoft executive to go into effect”.⁵¹⁴ After the process was halted, however, Microsoft continued to license.⁵¹⁵ The delay was an important step in raising Microsoft’s market share in the web browser market, which could not happen without Microsoft’s dominant power.

Though Microsoft eventually disclosed the interoperability information, its competitive effects in relevant markets is the same as a discontinuation of disclosure, which is why Microsoft’s actions were still identified as abuse. As a result, the final judgement is organised as follows: “Microsoft shall disclose to ISVs, IHVs, and OEMs in a Timely Manner, in whatever ...all ...that Microsoft employs to enable”.⁵¹⁶

The US approach is accompanied by negative effects. As analysed above, in the *Microsoft* US case, Microsoft was ordered to “disclose to ISVs, IHVs, and OEMs in a Timely Manner, in whatever ...all ...that Microsoft employs to enable”.⁵¹⁷ This decision opened up an overbroad scope for compulsory disclosure, as it does not focus on case specifics and existing relationships, and this may harm the software supplier and dampen the incentive to disclose interoperability information. Enlarging the scope of the compulsory disclosure of software interoperability information contradicts both IP law and competition law. From the IP law perspective, rights-holders are generally exempted from the imposition of new licensing agreements, but this overbroad scope has broken the exemption, which is harmful to IP holders. From the competition law perspective, regulation is only a remedy designed to be adopted when competition is injured or to protect existing competition from being lessened. As this decision ordered the disclosure of software interoperability information to all players, regardless of whether the firms were affected or not, this competition law obligation made private standard equivalent to public standard. It is a misapplication of competition law. The poor obedience by Microsoft both in the US⁵¹⁸ and EU⁵¹⁹ are responses to this misapplication, and reflect the fact

⁵¹⁴ *United States v. Microsoft Corp.*, 84 F.Supp.2d 9 (D.D.C.1999).

⁵¹⁵ *United States v. Microsoft Corp.*, 84 F.Supp.2d 9 (D.D.C.1999).

⁵¹⁶ *United States v. Microsoft Corp.*, 97 F.Supp.2d 59 (D.D.C. 2000), at iii.b. (in mid-August, a Microsoft representative informed Netscape that senior executives at Microsoft had decided to link the grant of the license to the resolution of all open issues between the companies).

⁵¹⁷ *United States v. Microsoft Corp.*, 97 F.Supp.2d 59 (D.D.C. 2000).

⁵¹⁸ In January, *New York v. Microsoft Corp.*, 531 F. Supp. 2d 141, 144 (D.D.C. 2008) (D.D.C. Decree Extension 2008). In April 2009, the parties agreed to extend the “Surviving Provisions” of the final judgments, including § III.E, at least until May 12, 2011. Joint Motion to Modify Final Judgment and Supporting Memorandum of Points and Authorities, *United States v. Microsoft Corp.*, No. 98-1232 (D.D.C. Apr. 16, 2009), available at <http://www.usdoj.gov/atr/cases/f244900/244921.pdf>. Judge Kollar-Kotelly agreed to the extension. Second Modified Final Judgment, *United States v. Microsoft Corp.*, No. 98-1232, § V.A (D.D.C. Apr. 22, 2009), available at <http://www.usdoj.gov/atr/cases/f245100/245110.pdf>. (citing footnote 2 of article: William H. Page; Seldon J. Childers, “*Measuring Compliance with Compulsory Licensing Remedies in the American Microsoft Case*”, at 239, 76 Antitrust L.J. 239 (2009).

⁵¹⁹ Commission imposes € 899 million penalty on Microsoft for non-compliance with March 2004 Decision. Event Date: 27/02/2008.

http://europa.eu/rapid/press-release_IP-08-318_en.htm. The European Commission has imposed a €561 million fine on Microsoft for failing to

that compulsory disclosure of software interoperability information orders must be made in a case-specific manner.

The EU basis of identifying a discontinuation of disclosure of software interoperability information as an abuse is different. Under the EU system of applying Art 102 TFEU, a discontinuation of the disclosure of software interoperability information is identified as an abuse of dominant market power and subject to compulsory disclosure. The identification has four bases: (1) the indispensable nature of the interoperability information;⁵²⁰ (2) elimination of competition;⁵²¹ (3) the new product;⁵²² and (4) the absence of objective justification.⁵²³ This basis evolved from several previous cases, namely, *Volvo*,⁵²⁴ *Magill*,⁵²⁵ and *IMS Health*.⁵²⁶ These four bases together form a typical argument in accordance with the reasoning in deciding whether to apply the essential facility doctrine. In other words, discontinuing the disclosure of software interoperability information is identified as rejecting access to an essential facility in the EU.

The *Microsoft* EU case is also problematic. In this case, the essential facility doctrine is applied to software interoperability information, and this poses a potential danger because the software interoperability information is only one part of a software, it is not substantially different from the other parts and is merely artificially made different from other parts. If the interoperability information part of the software is subject to the essential facility doctrine, other parts of the software may also be logically subject to the essential facility doctrine. This legal rule application is in opposition to general understandings that, first, IP rights are generally not subject to compulsory licensing, and second, only public standard IP rights are subject to a disclosure duty

comply with its commitments to offer users a browser choice screen enabling them to easily choose their preferred web browser. Event Date: 06/03/2013. http://europa.eu/rapid/press-release_IP-13-196_en.htm.

⁵²⁰ Judgment of the Court of First Instance (Grand Chamber) of 17 September 2007. *Microsoft Corp. v Commission of the European Communities* Case T-201/04, at 337-436.

⁵²¹ Judgment of the Court of First Instance (Grand Chamber) of 17 September 2007. *Microsoft Corp. v Commission of the European Communities* Case T-201/04, at 437-620.

⁵²² Judgment of the Court of First Instance (Grand Chamber) of 17 September 2007. *Microsoft Corp. v Commission of the European Communities* Case T-201/04, at 621-665.

⁵²³ Judgment of the Court of First Instance (Grand Chamber) of 17 September 2007. *Microsoft Corp. v Commission of the European Communities* Case T-201/04, at 666-712.

⁵²⁴ Case C-238/87 *AB Volvo c. v. Erik Veng (UK) Ltd* [1988] E.C.R. 6211; [1989] 4 C.M.L.R. 122. A refusal to supply case on IP law protected products, the compulsory supply order was made based on the foreclosure of secondary market.

⁵²⁵ Cases C-241/91 P and C-242/91 P; *Radio Telefís Éireann (RTE) and Independent Television Publications Ltd (ITP) v. Commission*. [1995] ECR I-743. (Emphasis exceptional circumstances refusal to license is abusive if: (a) the requested product is indispensable in the market competition; (b) refusal to license is likely to prevent the emerge of new products and potential consumer welfare is likely be undermined; (c) the refusal lead to eliminating competition (d) the refusal is not objectively justified).

⁵²⁶ Case C-418/01 *IMS Health GmbH v. NDC Health GmbH*, para. 38. The decision notes for elements in finding an abuse in refusal to license circumstances: (i) The product or service protected by copyright must be indispensable for carrying on a particular business. (ii) The refusal prevents the emergence of a new product for which there is potential consumer demand. (iii) The refusal is not objectively justified. (iv) The refusal is such as to exclude any competition on the secondary market.

(private standard rights are not). This application policy may harm IP holders and their incentive to innovate.

Based on the above analysis, it should be possible to outline a general standard or some basic elements with which a specific discontinuation of disclosure of software interoperability information as an abuse of market power can be identified, and which at the same time is sufficiently concerned with IP right and the incentive to innovate.

In addition to the premise of finding a dominant position, the first element of identifying an abuse in the interoperability information disclosure should be that the software interoperability information has been previously disclosed to engaged firms. This prerequisite should be affirmed because the expression part of software interoperability information is a kind of IP, whereas the rights-holders of IP works have an exclusive right to license or refuse to license. And, previously undisclosed interoperability information is not subject to compulsory disclosure. This principle will be beneficial to EU case law analysis. For instance, in *VirginMega v. Apple Computer France*⁵²⁷: “the French complainant, Virgin Mega, sought to obtain a license to use Apple’s proprietary information”,⁵²⁸ “which would have permitted Virgin’s downloads to run on iPod. The FCA (French competition authority) was then asked to assess whether this met the requirements of an abuse of a dominant position under French and EU competition law”.⁵²⁹ The FCA spent many paragraphs defining relevant markets and identifying the indispensability of Apple’s DRM,⁵³⁰ and finally concluded that Apple’s practise is not abuse. It did not notice that VirginMega’s request was for access regarding an IP rights-protected work that was not previously licensed to it. This point is sufficient to make a prima facie judgement that Apple’s action is not abuse. In addition, because Apple has the freedom to duplicate its IP rights works, and there is no further evidence of a competitive market generated by Apple’s previous licensing, such a refusal generates no anticompetitive effects.

The second element is that the discontinuation of disclosure of software interoperability information establishes the possibility of eliminating competitors. This element is emphasised by both US and EU competition law enforcers. The slight difference is that the EU approach does

⁵²⁷ *Décision n° 04-D-54 du 9 novembre 2004 relative à des pratiques mises en œuvre par la société Apple Computer, Inc. dans les secteurs du téléchargement de musique sur Internet et des baladeurs numériques* <http://www.autoritedelaconcurrence.fr/pdf/avis/04d54.pdf>.

⁵²⁸ This proprietary information allowing Virgin Mega to make music downloads compatible with and accessible to Apple’s portable player.

⁵²⁹ Giuseppe Mazziotti: *Did Apple’s refusal to license proprietary information enabling interoperability with its iPod music player constitute an abuse under Article 82 of the EC Treaty?* 28 W. Comp. 2 pp 253-275 (2005).

⁵³⁰ FCA’s decision, paragraphs 96 to 102: (i) available data showed that only a small percentage (around the 15%) of music downloaded from the internet was currently transferred and used on portable players; (ii) music downloads from platforms other than Apple’s could be made compatible with iPod by means of a simple operation (the co-called ripping) which consists in converting, for instance, the format of Virgin Mega’s downloads into Apple’s; (iii) vigorous competition between several suppliers characterized the French market for portable players, most of which were compatible with Virgin Mega’s Downloads). (Giuseppe Mazziotti: *Did Apple’s refusal to license proprietary information enabling interoperability with its iPod music player constitute an abuse under Article 82 of the EC Treaty?* 28 W. Comp. 2 pp 253-275 (2005).

not focus primarily on market elimination but considers follow-on innovation, competition and consumer welfare. However, these factors are the homogeneous effects of market elimination. And in fact, the EU and US are in agreement on this element. Further, compulsory disclosure, as a competition law remedy, focuses on ex post effects. Market elimination as the most important indication should naturally be considered as a sign for competition remedy intervention.

The third element, which is closely related to the second element, is that the discontinuation of disclosure of software interoperability information has no efficiency outcome that can offset the anticompetitive effects of discontinuation.⁵³¹ This element offers a defence for the three elements, because practises exist that appear to restrict competition, yet they also generate efficient outcomes, like saving costs, generating advanced products, which can offset its anticompetitive effects to different extents. The software market is an innovation-based market, and this feature makes it dynamic in competition and innovation. Compulsory disclosure is a very powerful competition law remedy; it can change market structure immediately, which is why it is threatening to a dynamic market. In the extreme situation, if it is applied without considering and balancing its negative and positive effects on both competition and innovation, a whole market can be destroyed. The third element protects justified competition and innovation in this market, and thus helps in avoiding possible harm to the copyright holder.

IV. CONCLUSION

At the interface of IP rights and competition law, imposing a compulsory licensing duty always requires the consideration of many factors. Two factors are always the most important: competition in innovation and the overall competition order. However, it is not easy to make an ideal decision on imposing a compulsory licensing duty, because IP rights and competition must be balanced in innovation-only markets.

⁵³¹ Judgment of the Court of First Instance (Grand Chamber) of 17 September 2007. *Microsoft Corp. v Commission of the European Communities Case T-201/04*, at 229. (The correctness of that approach is not open to dispute. Article 82 EC deals with the conduct of one or more economic operators involving the abuse of a position of economic strength which enables the operator concerned to hinder the maintenance of effective competition on the relevant market by allowing it to behave to an appreciable extent independently of its competitors, its customers and, ultimately, consumers. Furthermore, whilst the finding of a dominant position does not in itself imply any criticism of the undertaking concerned, that undertaking has a special responsibility, irrespective of the causes of that position, not to allow its conduct to impair genuine undistorted competition on the common market); *United States of America, Appellee v. Microsoft Corporation, Appellant*, 253 F.3d 34 (D.C. Cir. 2001). (As explained above, however, a monopolist does not violate the antitrust laws simply by developing a product that is incompatible with those of its rivals. See supra Section II.B.1. In order to violate the antitrust laws, the incompatible product must have an anticompetitive effect that outweighs any procompetitive justification for the design. Microsoft's JVM is not only incompatible with Sun's, it allows Java applications to run faster on Windows than does Sun's JVM. Microsoft's faster JVM lured Java developers into using Microsoft's developer tools, and Microsoft offered those tools deceptively, as we discuss below. The JVM, however, does allow applications to run more swiftly and does not itself have any anticompetitive effect. Therefore, we reverse the District Court's imposition of liability for Microsoft's development and promotion of its JVM).

In the EU and US software markets, the compulsory disclosure of software interoperability information has not received good obedience. There are two reasons for this. First, some compulsory disclosures suffer from biased aims: they both focus on one product market and neglected that the fact that many products are vertically and horizontally related; or, they focus only on short-term benefits, while the compulsory disclosure duty imposed ultimately harms long-term benefits. Second, some compulsory disclosures were imposed with an overbroad scope, which harms IP rights and competition, ultimately making it difficult for firms to obey.

Nonetheless, in the software market, compulsory disclosure should generally be avoided. It should only be adopted when the relevant market can be monopolised. Furthermore, should a duty be granted, that duty should be imposed within a scope of not exceeding existing contracts. For courts in the EU, when analysing software interoperability information disclosure, it is crucial not to treat the interoperability information as an essential facility, which is commonplace in other European industries. It is also important to take account of competition in both the downstream market and the upstream market. For common law countries (e.g. the US), court analysis and remedies should also consider the above elements. In addition, the remedies they seek to apply should be targeted and not excessive. Coverage that is too wide-ranging may undermine the incentive to compete and innovate.