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# Exhaustion of distribution rights in Open Source licensed software copies

- A study on a Right holder's attempt of combining Open Source software with FRAND licensing

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## Abstract

The ICT industry is an industry in convergence, where new technology and business models have been introduced. The increasing use of software, both in the product but also as the product has challenged the excluding view of intellectual property. New, arguably more effective working models have been introduced, such as Open Source, yet, actors are reluctant to part ways with the benefits of the monopoly right. Most recently the company PARC attempted to combine the Open Source working model with monetization on patent licensing through combining Open Source licensed software with FRAND-licensing, trying to combine the best of the two worlds. There are, however, a few mechanisms in intellectual property law, which purposes are to hinder unreasonable compensations to right holders. One of these mechanisms is the exhaustion doctrine, which could have an effect on right holders attempts of combining Open Source software and licensing revenues.

While the doctrine has existed since the 19-th century and was long considered a "straight forward proposition" it has recently undergone a resurgence with the introduction of new technologies. In the recent UsedSoft v. Oracle, a software license was deemed a 'sale' by the CJEU, which meant that the licensor exhausted its distribution rights to the licensed software copies. However, it was never concluded what effect it would have on Open Source licensed software and hence this paper has studied the exhaustion doctrines applicability on right holder's distribution rights to Open Source licensed software copies and in the light of this PARC's possibilities of combining Open Source with FRAND licensing.

# Table of Content

# 1. Glossary

**IPRs:** Intellectual Property Rights

**FRAND:** Fair, Reasonable and Non-Discriminatory means the set of terms that a patent holder agrees to license under. In theory, it is a way to avoid the possible anti-competitive effects of a technology standard.

**CJEU:** Court of Justice of the European Union is the chief judicial authority of the EU and oversees and interprets the EU law.

**SEP:** Standard-Essential Patent is a patent declared essential to a technology, which must be licensed under FRAND-terms.

**De jure standard:** De jure standard is a technology, method or product that has been officially endorsed by Standard Setting Organizations.

**De facto standard:** De facto standard is a technology, method or product that has gained prominence through widespread use rather than official endorsement.

**Standard Setting Organization:** Standard Setting Organization has the primarily objective of developing technical standards that can be used by a group of adopters.

**ICT:** Information and Telecommunications Technology, which is an umbrella term for the area of integration of information technology and telecommunications, including cloud networking, 3G-4G-5G technology and internet-of-things (IoT).

**ETSI:** European Telecommunications Standard Institute is a European standard setting organization active in the areas of ICT.

**PARC:** Palo Alto Research Center is a research and development company.

**CCN:** Content centric networking is an internet technology aimed to provide a more secure, flexible and scalable network.

# 2. Introduction

## 2.1 Background

The ICT industry is an industry in convergence, new and old business models are competing and being applied in new ways.[1] Industries, where intellectual property previously were used to exclude others (primarily the IT industry) are becoming part of wider ecosystems built around standards. The SEPs necessarily infringed by the implementation of these standards are therefore important for standard developers. The historic compromise between getting the broadest possible implementation of the standards and a fair return on investment for the standard developers has been the FRAND licensing regime. This standardization process is known as de jure standardization and has worked well so far. For example, the telecom standards 4G and 5G are both developed through the process of de jure standardization.[2] This paper will however not cover de jure standardization but rather look at the phenomenon of Open Source that could be, if successful, a form of de facto standardization.

It is not only the traditional IT companies that have had to adapt, so also the telecommunication industry in general. One adoption made is the increasing focus on software, both in the product and as the product. In this new software centric environment, Open Source software has become important for these companies as it easily accessible, free code, which could be used to cut lead-times and reduce costs.[3]

The majority of Open Source software comes with a royalty free patent license from the contributor to any downstream recipient of the software. The ICT industry does heavily rely on revenue from license fees, hence the free patent license associated with Open Source is

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[1] P.Yu and M. Decina, 'ICT Industry Convergence', p. 1, 2013.
[2] The typical patent & licensing process of such innovators are divided into five core processes: 1) Early research, where innovations are created and protected by IPRs, 2) Standardization and development, where technology standards are shaped, 3) Patent, where R&D work is facilitated in a strong patent portfolio correlating to technology standards, 4) License, where actors are giving fair access to license standard essential patents (SEPs) that enable access to technology ecosystem, interoperability, increased performance and lower barriers of entry to new players, 5) Reinvest, where much of the return on investments on patent licensing is being re-invested in R&D to keep the innovation cycle going. Read more on https://www.ericsson.com/innovation/patent-and-licensing, accessed 2016-12-05.
[3] See more benefits in Section 8.2 'Why Open Source?'.

somewhat of a foreign concept, where one would both contribute to the development of a standard,[4] and having to adhere to royalty free terms.

This paper will explore legal options of combining the Open Source licensing model with the ICT industry's interest of being able to monetize its IPRs. The focus of this paper will be on an example case based on the research company PARC, which attempts to clearly separate copyright and patents in their CCNx licensed software. If PARC succeeds it would give them a model where they, by providing the code for free, could build a larger user base than if they would charge for the license to the copyright. Once the user base has been built and the ecosystem is mature, PARC could start licensing its portfolio of patents relating to the CCNx licensed software, and thus get the benefit of past technology adoption, and a large user base to license. The same logic could then also be applied in a de jure standardization context, where the development could be done under an Open Source license like the CCNx license, thus avoiding confusion as to what patents are available under what policy, and allow everyone to participate on both tracks of the standardization process.[5] Standing in the way for PARC's new business model is, however, the threat of losing its distribution rights to the downloaded copies due to the exhaustion doctrine.

## 2.2 Problem statement

The exhaustion doctrine is a principle that stems from the industrial economy, where companies covered broad market verticals in-house from R&D to physical end-products. Therefore, right holders were often those who also controlled the end-product. To limit the power of a right holder to control markets by the means of their intellectual properties in their end-products, intellectual property legislations successively introduced the exhaustion doctrine. Once a product was sold, the right holder would lose its distribution rights to such sold copy.

With time, the economy started to shift towards a more knowledge-based economy, where right holders and producers of the end-products were separate actors. Also the end-product started to change, from tangible to intangible products, most notably in the rise of software in the digital

[4] De facto standard in this case.

[5] See further on ETSI 'Summit on Standardization and Open Source - The Best of Both Worlds', http://www.etsi.org/news-events/events/979-2015-11-summit-standardization-and-open-source, accessed 2016-12-20.

world. Due to this change, IPRs were now traded in new business models to firms positioned in different facets of verticals, often through different type of licensing.

Licensing is a beneficial right and grants, in this case, a right to use someone else IPRs. This relationship is facilitated in a license agreement between two or more actors and has its basis in contractual law. The exhaustion doctrine however is derived from a property perspective, where the ownership of property controls which rights are exhausted and therefore exposed. These two rights are fundamentally different from each other but what has happened in the age of knowledge economy is that these two rights are starting to merge and giving rise to the question what rights should be giving precedents – the right to control and regulate IPRs as beneficial rights in license agreements or the right of property ownership to affirm the protective interests of the industrial economy. These considerations have forced the intellectual property legislation, including the exhaustion doctrine to adapt to fit the new structures of the knowledge economy, as the doctrine was created in a time of the industrial economy.

This adaption was especially evident in the decision in UsedSoft v. Oracle from 2012, where a software license tied to a software product was considered a sale rather than a license and thus the right holder's distribution rights to the product were exhausted.[6] Until this case it was thought that a license to a virtual software could not be subject of the exhaustion doctrine as there was no physical product to claim ownership of. Instead transactions like in UsedSoft v. Oracle were viewed as only to constitute a beneficial right for a licensor to use the virtual product. UsedSoft v. Oracle was the first case in Europe that showed that copies of virtual software products can be compared with copies of physical software products. The case means that a right holder's distribution rights does not necessarily need to be tied to a physical product to be exhausted.

The reasons why the CJEU considered the license constellation a sale was because of the way the terms of the license were stipulated. It was broadly written with no significant use restrictions, where the court especially pointed out that the perpetual nature of the license was the determine factor. It further ruled that the download of a software copy and the terms of a user license for that copy form an indivisible whole, meaning that those two operations must be examined as a whole for the purposes of their legal classification.[7] In other words the court

[6] UsedSoft GmbH v. Oracle International Cor., C‑128/11, 2012.
[7] Section 44, UsedSoft v. Oracle.

tied the beneficial right of a license to the ownership of a software product and saw them as a unity rather than a license and a product. This raise the question what implications the ruling might have on other beneficial rights, such as the focus of this paper, namely Open Source licensed software which is known for its broad and generous licensing terms.

Open Source licenses, just like the license that was subject of the exhaustion doctrine in UsedSoft v. Oracle, are perpetual, granting users rights to use and develop software code. The Open Source code is often, similar to the software in UsedSoft v. Oracle, available for users to download from internet, albeit in a different form as it is offered as software code. Thus, the question is if a download of Open Source software copy subject to an Open Source license can be deemed as a sale with the same applied rationale of UsedSoft v. Oracle and therefore be subject of the exhaustion doctrine. If so, this adaptation of the exhaustion doctrine would challenge the way the Open Source licensing model is used and expose many companies' IPRs for exhaustion, as right holders would not be able to subject their terms in license agreements. For example, one would perhaps be allowed to incorporate the downloaded software copy without bearing any patent licensing fees as the distribution rights to the patents are exhausted.

In the case of PARC and its new business model, the possible exhaustion of distribution rights would also indirectly limit its exclusive control over its IPRs, as copies in the future could be re-used into other settings, which would normally be licensing royalty bearing and thus be used to argue that the royalty should be lowered by a corresponding amount to the value of the patents now incorporated via Open Source.[8]

## 2.3 Purpose

The purpose with this paper is to examine whether the exhaustion doctrine can exhaust the distribution rights of Open Source licensed software copies due to the terms under which such licenses are often granted and in the light of this examine a right holder's possibilities of combining Open Source with FRAND licensing, thus combining standardization development with patent licensing revenues. The legal findings of this paper will further be elaborated on from a business perspective to highlight what the possible implications would be for right holders, and more specifically those with licensing programs similar to PARC's licensing

[8] See i.a K. A. Boushie and K. L. Hoff, 'The Importance of a Reasonable Royalty License Comparability Analysis in Patent Litigation', "*Other economic factors, such as market conditions, competitive technologies, age of technology and technological obsolescence, timing of the agreements, and barriers to entry, can all impact comparability", 2013.*

program. Thus, the greater objective of this paper is to try to offer some clarity what headroom the current legislation offers to combine the Open Source model with licensing revenues.

### 2.4 Research Questions

1 Does the exhaustion doctrine, due to the commonly used terms of Open Source licenses, apply when an Open Source licensed copy is downloaded from the internet with the consent of the right holder?

1.2 If yes, what distribution rights would such exhaustion concern?

1.3 If yes, could contractual restrictions on patents in the Open Source license reduce the risk of the distribution rights being exhausted?

1.3.1 Does it make any difference if the patents are offered under FRAND terms which provides for a fair access to the technology?

2 What business implications would the issues of exhaustion mentioned under question 1 have for right holders with licensing programs in the ICT-industry?

## 3. Method

### 3.1 An example case

To narrow the scope of the analysis and not to get lost in various Open Source software constellations and implications, this paper will derive its theoretical analysis from an actual up-to-date case; PARC's attempt to combine Open Source software and patent licensing revenues through FRAND in their CCNx project. The case represents actual concerns in the industry and therefore broader implications can, and will, be derived from it. This will make the paper to stay on a common theme throughout the process and stay relevant in regards to its purpose.

### 3.2 Disposition

As this paper, will derive its legal analysis from an example case, past and current intellectual property law will be processed to highlight patterns that can be applied on the specific case. This requires an iterative process as there is a significant legal uncertainty when it comes to exhaustion of distribution rights of Open Source software copies. Thus, to deter externalities of the law and draw the most rationale conclusions of the material, the paper will use an abductive reasoning, including a comparative analysis of American and EU law to highlight patterns.

The paper will start with providing the reader a background on Open Source followed by a short review of the dual nature of IPRs in software. This will provide the reader a better understanding

of the context to the subject and help to highlight the research problem even more. The background section will then be concluded with an explanation of the example case and its legal concerns, followed by an outline of Sweden's normative structure in regards to international law and the constitutional background of the exhaustion doctrine in EU law.

Following the background, a long passage of the path of the exhaustion doctrine is highlighted to understand how the doctrine has evolved with time, beginning with the early developments of the doctrine in the industrial economy, followed by its adaptation to the knowledge economy and on licensed software. After the section of the exhaustion doctrine's development over time, a section on different licensing constellations that have been deemed enforceable by courts as valid beneficial rights, will be discussed to see if there are terms in the CCNx license that resembles those licenses. The material part of the paper will then be concluded with a discussion on innovation policy in the knowledge economy to understand what interests that are important to persevere and how the exhaustion doctrine should be applied for incentivizing innovation.

As mentioned, this will be an iterative process, where the study will go from rulings and statements made by courts to theoretical discussions, including opinions from legal scholars and my own reflections in the light of the example case, to gradually come to conclusions reflecting the purpose of this paper.[9]

Following the iterative process, the highlighted discussion will then be concluded in the conclusion section, where the outcomes of the legal research are presented. It should be noted that although the conclusions are derived from research, it is still only a subjective attempt to interpret the material and should be viewed as such. The implications of such conclusions will then be applied in a theoretical framework called the three arenas, where the implications on a high-level will be divided into an administrative arena, a judicial arena and a business arena to highlight the consequences of the paper's conclusions for the ICT-industry.[10]

### 3.3 A comparative analysis

The main reasons for choosing a comparative method is because Open Source software and exhaustion in general are rather unusual concerns for Sweden's judicial system. Sweden has

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[9] A more inductive reasoning, including a traditional legal method, would perhaps be suitable as well, but does not invite the same iterative practical discussions on the specific case and is therefore not preferred.

[10] U. Petrusson, 'Intellectual Property and Entrepreneurship – Creating Wealth in an Intellectual Value Chain', p. 104-106, 2004.

not experienced any cases regarding exhaustion of distribution rights in regards to intangible products nor Open Source software at all. This insufficiency of Swedish law makes thus foreign legal information important sources of information.

In Sweden, there is no formal rule or obligation for courts to apply foreign law. However, foreign arguments that can be attached to the rational of Swedish legislation have an important normative effect for the functioning of Swedish civil law and serves a second purpose of harmonizing international civil law. It is especially fundamental in the field of intellectual property and for a country such globalized as Sweden.[11] In fact, in new legal areas foreign law has a vital role in justifying national court's decisions and reasoning.

Furthermore, all legal systems share a common goal of finding and applying the best and most just legal rules. As other countries than Sweden may have come further within IPRs it is likely that Sweden's judicial system would try to adopt and compare legal solutions from other jurisdictions, especially if they are based on the same underlying norm and objective. The objective and rational of IPRs and more specifically the exhaustion doctrine, are shared between many countries, which therefore makes a comparative analysis interesting to highlight arguments made in other jurisdictions.[12] One of the countries that has come the furthest with IPRs and especially the quantitative appliance of the exhaustion doctrine is United States, as it is by far the most IPR intensive jurisdiction in the world.[13] Therefore, will this paper compare American law with Swedish law to find possible arguments that can be used under Swedish law on the example case.

Additionally, by using American law, Swedish law receives a greater source of legal information to choose arguments from, which would likely improve the quality of Swedish intellectual property law.[14] It should be noted that this is only a comparison and that the two

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[11] G. Lambertz, 'Lagstiftningsprocessen i en internationaliserad värld', p. 240, 2000.
[12] See section 'Normative structure of IPRs' for more information on how states interact with the WIPO (World Intellectual Property Organization).
[13] In MacFarlane v. Tayside Health Board, Lord Steyn described the influence of foreign legal arguments with *"The discipline of comparative law does not aim at a poll of solutions adopted in different countries. It has the different and inestimable value of sharpening our focus on the weight of competing considerations.*" This means that comparative law often works as an inspiration of finding the right process and weighting different solutions and outcomes against each other.
[14] R. Zimmerman and M. Reimann, 'The Oxford Handbook Of Comparative Law', p. 514-537, 2006.

jurisdictions are built on different foundations and ideas, and that is something that will be taking into considerations when discussing the arguments made under American law.

Lastly, Open Source is much an American phenomenon and the licenses, including the license in the upcoming example case, were all written in the light of American law. This context is important to understand for grasping the purpose with the license and Open Source in general, which will be discussed later in this paper.

### 3.4 Judicial interpretation

Naturally, there are also some difficulties with applying a comparative method, especially when assessing a case with such legal uncertainty; knowing what court cases and doctrine are the most relevant for the specific case is hard to determine, not to mention the task of prioritizing the different arguments made. Hence, the possibility of Swedish law rejecting arguments or giving other considerations precedence other than those proposed in this paper's comparative analysis is recognized. To encounter this problem, this paper can only try to provide a best assessment of the law by working across different sources through a normative hierarchy; conclude their legal value by applying the legal arguments in the wake of Swedish law, and apply the most right judicial interpretation, albeit it will be based subjectively.

Since this paper is trying to follow the path of the exhaustion doctrine to determine whether it is applicable or not on a case with high legal uncertainty, it is going to foremost use a teleological judicial interpretation, also known as Ratio legis.[15] The high legal uncertainty of the chosen case makes a teleological judicial interpretation a good fit, as it places its emphasis on the original intent and purpose of the law and is preferably used when analysing legislations possible adaption on unclear cases. Therefore, it is perceived that this interpretation would be the most rationale interpretation to apply in these types of cases. The challenge for this paper and the chosen interpretation is to determine whose intent to follow as there can be many interests in regards to intellectual property, as well as knowing what cases that deter from the path. Therefore, the choices this study makes in its material selection will be even more important for a coherent interpretation of the exhaustion doctrine.[16]

Lastly, as intellectual property's function as a mechanism for incentivizing innovation is a heated topic for all practitioners, this paper will also have a prudential approach to the material,

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[15] In American law known as 'Original Intent' method.
[16] J. L. Murray, 'Methods of Interpretation – Comparative law Method', p. 39-47, 2009.

where different competing interests are balancing against each other to highlight the rationale in the legal arguments made. However, this judicial interpretation will only be secondary and assist on the teleological judicial interpretation on weighting different policies and considerations.[17,18]

## 4. Material

To highlight the path of the exhaustion doctrine this paper will mostly emphasis its analysis on case law to determine the potential adaptation of the exhaustion doctrine. The case law is going to be assessed with a doctrinal approach, meaning precedencies are giving a higher credibility value. In this way, the paper creates the opportunity to make more credible conclusions from the case law if the doctrine has been previously applied inconsistently. Swedish courts are also bound by previous precedencies made by the Swedish Supreme Court as well as the CJEU; hence, the decisions and rational of those cases will be more highlighted as legal sources. Rulings made under American law will be weighed against Swedish law to validate their legal legitimacy under Swedish law. This will be done by assessing the legal arguments with statues and case law in a Swedish judicial context to determine its applicability as legal arguments under Swedish law. Further, to deter externalities from the case law and to align it with the original intent of the exhaustion doctrine, it will also include doctrine discussing these cases, including scholars giving their own views on them.

Additionally, the doctrine is also used to build up an understanding of the exhaustion doctrine and Open Source software. It is recognized that the doctrine, especially journals and online sources, rather often are biased and can include personal opinions, especially in regards to Open Source and IPRs. To encounter this, a critical mind-set is needed to filter the personal interests and deter the information objectively. Thus, the authors backgrounds in regards to working title and experience are monitored and analysed to dissect any bias before using the information as a source, albeit it is hard to extinguish any subjectivity in doctrines. However, personal opinions backed up with legal rational do serve some value as well, as this paper is trying to analyse a case with great legal uncertainty. When personal opinions are presented it will be clearly stated so for the awareness of the reader.

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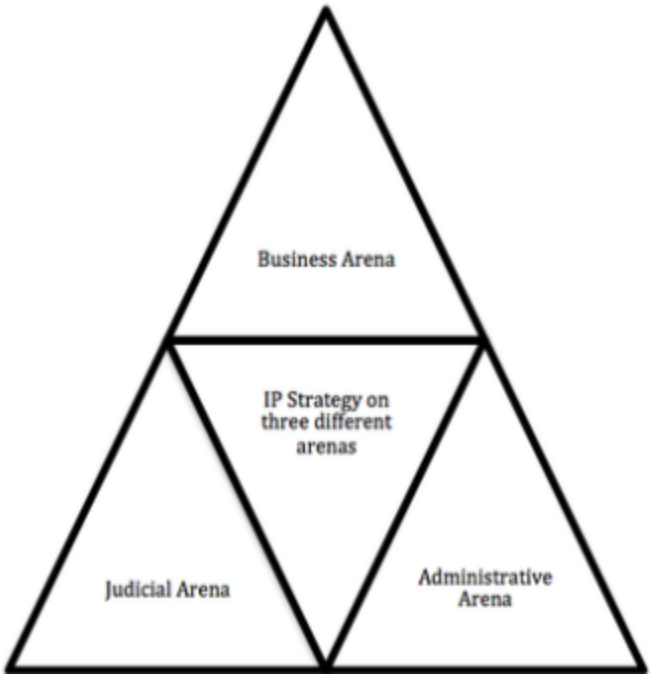
[17] E. Trolle Önnefors and P. Nilsén, 'Perspektiv och metod', 2014.
[18] 'Principles of Constitutional Construction', http://www.constitution.org/cons/prin_cons.htm, accessed 2016-11-05.

A validation problem with the topic of this paper is that much of the related legal information are coming from more untraditional legal sources, such as journals and to some extent online articles. This is because these sources are often the most updated, and because of the limited case law available regarding exhaustion of distribution rights in software copies. The landscape of software, including the legal implications, are changing fast. This could be the reason why not many authors have written books about the subject. In order to match the traditional source quality of books in terms of reliability and validity the authors backgrounds are checked and only legal material from scholars with extensive related academic background or equivalent are used.

## 5. Theoretical Framework




To highlight the implications of this paper findings for the industry, the paper will be applying a theoretical framework called The Three Arenas, which was developed by Professor in intellectual property law and director of the Institute for Innovation and Social Change at the University of Gothenburg, Ulf Petrusson. The analysis will however not go in to any details, instead provide possible implications on a highl-level. The rationale behind the three arenas is that IP strategy is based on the collective actions in the arenas of business, judicial and administrative. The business arena is the arena of commercial transactions of IP; The judicial arena is the arena of courts in regards to litigations on IPRs; The administrative arena is the arena of the administrative procedures of claiming IPRs.[19] In this way, the paper can present the implications more practically for actors in the industry and their IP strategy, especially in regards to the commercial licensing of Open Source software. Further,

[19] Note that some IPRs are claimed upon creation and hence are not included in the administrative arena.

it provides structure to this study's conclusions and gives the reader a good overview of the different possible implications.[20]

## 6. Target Audience

The target audience for this paper is foremost someone with a legal background familiar with the basics of intellectual property law. Engineers and software developers can understand and draw conclusions from the study as well, with the requirement of prior basic knowledge of IPRs.

## 7. Delimitations

The paper will focus on the issues of Open Source software in the context of the ICT industry and especially in regards to patent holders with licensing programs. The analysis will be limited to an example case based on a right holder's attempt to release software through an Open Source license that also restricts the use of patents. Although, I do recognize that there are many different types of Open Source licenses this study will only be able to analyse one type of Open Source license, albeit it resembles the BSD 3 license, which is one of the more common Open Source licenses. Since the structure and purpose of many Open Source licenses are rather similar, many conclusions of this paper may also be applied on other Open Source licensed software.

The paper will have its basis in Swedish law and therefore also be subject to EU law, but will include case law and doctrine under American law as well as it could provide insights and valid arguments on the matter.

Since IPRs, especially in an Open Source setting, is also a highly debatable philosophical discussion point, this paper will primarily analyze the material from a legal perspective. However, in order to understand the effects of the legal considerations regarding the exhaustion doctrine, some more philosophical argumentations tied with a rationality on innovation and growth, especially in regards to policy considerations, will be reflected on as well.

The use of IPRs in this paper will exclusively be limited to the two main proprietary rights of software, namely copyright and patents. Hence no trademark, design or trade secret rights will be taking into consideration.

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[20] U. Petrusson, p. 104-106, 2004.

The highlighted patent discussion in this paper is indeed about 'software patents', but it will not include any discussion on the ambiguousness or validity of such patents. Instead, this paper will focus on the use and protection of such patents in regards to practicing entities in the ICT-industry.[21]

This paper focus on IPRs issues in relation to Open Source licensed software copies. Each licensed copy consists of certain terms and conditions, which in turn are governed by contractual law. Therefore, the topic of Open Source licensing must be discussed in a contractual law context, albeit it is the ownership of the property that is under scrutiny, not the relationship between licensed parties. For example, a transaction labeled as a 'license' may, depending on its terms, be deemed as a purchase which would trigger the exhaustion doctrine in regards to the licensed copy. While the focus of this paper remains on IPRs issues of Open Source licensed software, contractual terms under which such licenses are granted will inherently be part of the discussion.

Finally, this paper will not include any discussion on the different terms to describe Open Source nor the specific meanings with them.

# 8. Open Source software

## 8.1 The rise of Open Source Software

When software started to become more of a viable market rather than a by-product to hardware, corporations began to treat their human readable source code as treasured business secrets and thus restricted the access and distribution to third parties through intellectual property. This type of software was considered to be 'proprietary software' and owners could protect its source code with foremost copyright but later also through patent rights. This development was unacceptable for the famous MIT[22] hacker Richard M. Stallman, who thought that software should be freely available to all and the use of the code should not be limited by law or other restrictions. Consequently, Stallman quit MIT in 1983 and founded what would become the Free Software Foundation (FSF) with the purpose of creating and stimulating software that would be freely available to all. To support his objectives, Stallman created the General Public

[21] Hence, this study will not either focus on the use of such patents by Non-practicing-entities (NPEs).
[22] Massachusetts Institute of Technology.

License (GPL) which allowed anyone to freely use, distribute and adapt the licensed software at no charge. The only restriction was that the GPL license should follow the source code, enabling software to continue to be freely available for all. This software would be regarded as having an open source code instead of a proprietary and thus was labelled as non-proprietary software.[23]

Though the release of GPL was a success, it was not until the release of the Linux Kernel in 1991 under the GPL license where the free software movement really started to take off. A kernel constitutes the central core of a computer's operating system, which controls everything that occurs in the system. Until the creation of the Linux Kernel no such non-proprietary kernel of relevance existed. This created a foundation on which software could be built on and contributed to the rapid development of non-proprietary software.

In 1998 Netscape Communications released their source code of its web browser, which sparked a group of prominent free software developers to get together and promote collaboration between programmers worldwide under the newly featured term Open Source. Consequently, The Open Source Initiative (OSI) was founded as a public benefit corporation to further foster the development of the Open Source movement.[24] Since then the Open Source way of working has grown rapidly every year and software such as the Android platform, Mozilla Firefox and VLC Media Player all are based on the Open Source model. In fact, most of the internet infrastructure runs today on Open Source software.

## 8.2 Why Open Source?

The benefits are many; firstly, it is often regarded as more secure than proprietary software as the code is open and thus becomes exposed towards more developers. Subsequently, more users can test sets of codes, which means it is more likely that flaws, including bugs, can be found and fixed more quickly. Secondly, it often improves the quality of the software as many developers get together and contribute to software code. Talented people are located everywhere and in different corporations, thus getting together rather than developing on their own often creates a greater output. Thirdly, Open Source software is typically regarded as more flexible as it can be more easily tweaked to fit new purposes and features. These benefits do

[23] Would later also be known under the term Open Source.
[24] Y. Van den Brande, 'A History of Foss Law and Licensing', in: The International Free and Open Source Software Law Book, 2014.

not only please the commercial interest of corporations but also secures the interoperability between open standards[25] and industries.[26] Fourthly, Open Source software creates more freedom for customers and the market as it typically does not create vendor-lock-ins,[27] which thus foster competition and drive development forward. Lastly, Open Source often lowers the development costs and time to market, as the development work is shared and interconnected. The arguments stated above represent the typically and most common arguments for the Open Source model.[28]

### 8.3 The dilemma of Open Source

Traditional proprietary software companies have relied on their intellectual property portfolio to create revenue streams for compensating their investments, however this strategy is usually not regarded as feasible for Open Source companies as they only retain limited rights to their software creations. Companies working exclusively with Open Source have typically been dependent on funding and business models based on support services, as companies usually do not monetize on their licensing of Open Source software. With time, companies developing proprietary software have understood the benefits with the Open Source model and thus adopted it in their business models. At the same time, they do not want to risk their licensing business or expose too much of their knowledge and knowhow, which are largely dependent on IPRs, which are granted for free under Open Source licenses. To achieve its purpose with development from downstream users, these grants are necessary for the Open Source model to work, since without those grants users would infringe on IPRs by using the software and thus

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[25] A term used to describe standards that are made available to the general public and are developed (or approved) and maintained through a collaborative and consensus driven process. See more on http://www.itu.int/en/ITU-T/ipr/Pages/open.aspx, accessed 2016-11-15.

[26] Meaning facilitating interoperability and data exchange among different products or services that are intended for widespread adoption. E.g. so a cell phone can work on all continents without switching out the sim-card. See more on: http://www.itu.int/en/ITU-T/about/Pages/default.aspx, accessed 2016-11-15.

[27] It means that the use of technology is held restricted or proprietary by a vendor. This technique can be disabling and demoralizing as customers are hindered from switching to alternate vendors. E.g. the SIM card as it is often proprietary to a specific service provider. See more on https://www.techopedia.com/definition/26802/vendor-lock-in, accessed 2016-11-15.

[28] Open Source Case for Business, Open Source Initiative, accessed 2016-11-27, https://opensource.org/advocacy/case_for_business.php. Also, Benefits of Using Open Source Software, gbdirect, http://open-source.gbdirect.co.uk/migration/benefit.html, accessed 2016-11-27.

possibly run the inherent risk of lawsuits from upstream right holders. The dilemma is best described by Sun Microsystems Inc's[29] co-founder Bill Joy: *"We're spending over a billion dollars a year in research. I can't just throw it all on the street"*. Thus, companies are trying to come up with new ways of combining the different benefits with the Open Source model, software and IPRs by coming up with different business models that can utilize the different benefits.[30]

## 8.4 The dual nature of IPRs in software

When software was first introduced in the second half of the 20th century it was first regarded as a bi-component of tangible innovations that itself were patentable, thus there were few incentives for right holders to protect software with patents and other IPRs. Trade secrets and copyright were deemed as sufficient enough. Though with time, the standalone value, complexity and importance of software increased and right holders started to also seek patent protection to increase their competitive advantage. Today, right holders usually seek both copyright and patent protection as the two complement each other and hence serve their own purpose.[31]

Copyright protects the text entered into a computer that creates the functions - the so-called source code, describes the process of the software, which a person skilled in the art can read and understand similar to the way an average person can read and understand manuals of home electronics. If one would enter this source code in a computer, it would create certain functions and thus become a software. Just like the way a manual describes the process of a patented home electronic, software code is the manual that describes the process of the patented functionality appearing on a computer screen or in a hardware.[32] Thus, a right holder can first get copyright protection for its source code but later also be able to apply for patents for the functionality that the source code creates.

## 8.5 Open Source software and consequences

When a licensor license Open Source software, it normally licenses it through a broad copyright only license that enables downstream users to develop and redistribute the software without

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[29] In 2010 Sun Microsystems Inc. was sold to software giant Oracle Corporation.
[30] C. Nosko et. al., 'Open Source and Proprietary Software: The Search for a Profitable Middle-Ground', p. 1-2, 2005.
[31] Reason 2.4, T 1173/97 (Computer program product/IBM), European Patent Office, 1998.
[32] Or in patent application language – 'apparatus'.

risking infringement suits from upstream right holders. Since these licenses typically only includes copyright grants to the source code and not patent grants that could potentially read on the functionality. So, with the duality of software in mind, developers are only being granted one of the proprietary rights, hence giving rise to the question if a right holder can release copyright code under a broad license but then sue one for patent infringement once applying the code in a process which creates patented functionality. In the mentioned UsedSoft v. Oracle, a copyright license was deemed a sale, which thus meant that the right holder exhausted the distribution rights in regards to the licensed software copy.[33] It was never concluded if the exhausted distribution rights included patent rights as well nor what consequences it would have on other software licensing constellations, such as Open Source.

# 9. Software patents

## 9.1 The value of software patents

The debate on so-called 'software patents' is perhaps one of the most debated topic's in the field of intellectual property, but it is not hard to see why actors are seeking patent protection for software. Firstly, copyright only offers a very limited protection of the code, resulting in competitors usually being able to re-write a similar code with the same functionalities without running the risk of copyright infringement. Secondly, most of the SEPs today are patented software functionalities, making them more valuable assets for ICT-companies to license than copyright, which is typically not considered being part of standardized technology.[34] Lastly, a recent American study shows that the stock market value of a company increases when new patents are being issued. For example, Amazon's 'one click purchase' software patent made the stock rise 34 percent in the two days after the announcement of the patent.[35] Thus, the only way to arguably protect the most valuable part of the software – the functionality, is to protect it through patenting.

[33] Section 77, UsedSoft v. Oracle.
[34] The Competition Directorate-General of the European Commission, 'Competition policy brief – Standard essential patents', 2014.
[35] L. Kogan et. al., 'Technological Innovation, resource allocation and growth', p. 9-10, 2013.

### 9.2 Software patents in Europe

On occasions, the public believe is that 'software patents' is solely an American phenomenon, but that is a slight misconception, though the scope of patentability of software is much more expanded under American law. Under the European Patent Convention (EPC) and in particular Article 52, programs for computers is excluded from patentability, but only to the extent that the patent relates to the standalone computer program. As a result of this partial exclusion, computer program that is tied to new and non-obvious functionality in an apparatus can be deemed as patentable subject matter under European law.[36] As stated by the EPC in its grant to IBM in 1998: *"A computer program product is not excluded from patentability under Article 52(2) and (3) EPC if, when it is run on a computer, it produces a further technical effect which goes beyond the "normal" physical interactions between program (software) and computer (hardware)"*.[37] Hence, it is clear that software patents are also something that is included under EU law, though the criteria for obtaining it differs compare to under American law.

## 10. The example case

### 10.1 Overview

In January 2016, the research company PARC released an announcement of releasing software under a self-constructed Open Source license, attempting to combine the Open Source licensing model with patent licensing revenues. This attempt was called the CCNx project. In this way, they attempted to combine the benefits of Open Source while also getting a return on their investments in producing the software.

The purpose of the project is to use the Open Source model to develop, promote and evaluate a new approach to communication architecture, which PARC calls content-centric networking (CCN). Since there are still many problems to resolve for the ICT-industry in the area of internet communication, PARC hopes by releasing the CCNx code to the public, developers can use the

[36] European Patent Office, 'Patents for software? European law and practice', p. 1-10, 2013.
[37] Reason 2.3 and 2.4, T 1173/97 (Computer program product/IBM), European Patent Office, 1998.

specifications to lay an architectural foundation for the next-generation internet, in other words to create a de facto standard.[39]

## 10.2 The licensing terms

The software can be freely downloaded from PARC's website with the following licensing terms:[40]

"Copyright (c) 2013, 2014, 2015, 2016, Xerox Corporation (Xerox) and Palo Alto Research Center (PARC)

All rights reserved.

Redistribution and use in source and binary forms, with or without

modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright
  notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright
  notice, this list of conditions and the following disclaimer in the
  documentation and/or other materials provided with the distribution.
* Patent rights are not granted under this agreement. Patent rights are
  available under FRAND terms.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE

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[39] 'PARC Offers Content-Centric Networking (CCNx) Software to Advance Next-Generation Internet'.http://www.parc.com/news-release/111/parc-offers-content-centric-networking-ccnx-software-to-advance-next-generation-internet.html, accessed 2016-09-10.
[40] The CCNx license. http://blogs.parc.com/ccnx/ccnx-downloads/, accessed 2016-09-10.

DISCLAIMED. IN NO EVENT SHALL XEROX or PARC BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE."

### 10.3 The implications of such licensing terms in regards to the exhaustion doctrine

The first question that this paper will try to answer is whether this download is triggering an exhaustion of PARC's distribution rights to the copyrighted software copy, despite the intent by PARC to just license the software copy. As mentioned, recent case law from the CJEU has stated that licenses can be deemed as sales if they have the characteristics of a sale.[41]

Secondly, PARC is very clear in their licensing terms that the license excludes patent rights and that they will be offered under a separate license according to FRAND terms.[42] Thus, the license only includes a grant to the copyright, when it is downloaded from their website, and not any patented functionalities that the code creates. Assume that a company download the CCNx software, use it and apply the code in a computer and consequently functionalities are generated which are rather likely infringing on PARC's patents; can PARC hypothetically then use their patents to block the use of the CCNx software they made available on their website for lawfully download or are PARC's patent rights also potentially included in an exhaustion of their distribution rights in regards to the CCNx software once downloaded from the website?

Although it is presumed that patents are infringed once code is used and functionality appears, it is rather likely that the intended use in PARC's case is in fact to use the software and thus creating functionalities. This could perhaps mean that a potential exhaustion of the distribution rights to the copy would include PARC's patents as well. Previous case law by the US Supreme Court has stated that if parts of a patented invention were embodied in a copy, whose intended and reasonable use is to fully practice the invention, then the patent holder cannot restrict the

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[41] I.a. Section 49, UsedSoft v. Oracle.

[42] "Patent rights are not granted under this agreement. Patent rights are available under FRAND terms".

use of it.[43] It is recognized that this interpretation of patent law is made under American law, but this view of patent law under EU law has never been tried before, hence this paper will conclude if the logic can be applied on software under EU law as well.

PARC has in the license restrict patents not to be included in the grant. Now, assume that the software copy is considered embodying patented material and the download is considered a sale and not a license, thus exhausting PARC's distribution rights to the copy. Would such contractual limitation perhaps hinder an exhaustion of the distribution right to the code, considering a patent holder has the right to place whatever conditions it wishes to restrict his copy, as long as the conditions do not violate law or policy.[44] This means that if certain enforceable rights are conditioned in a transaction then the distribution rights of a right holder's copy should not be exhausted once the copy is sold. Therefore, if the CCNx software copies, with its restrictions on patents, is deemed as a valid restriction then the patents embodied are not effected by an exhaustion.

Under American law it is widely assumed that if a right holder sells or license a patented copy subject with a restriction on the use and receives consideration, then the consideration is presumed to only be for the restricted use. The purchaser may therefore only use the patented copy without violating the restrictions set in the agreement. Similar rational can be identified in the UsedSoft v. Oracle case where the reimbursement was weighted against the right holder's economic value of the copy.[45] Since PARC states in the licensing terms that the grant does not include any patents, it is clearly a restriction on the use of the software, and if it is deemed enforceable, it shall not be included in the exhaustion of PARC's distribution rights in regards to the downloaded copies. So, the question is if a right holder can limit the exhaustion doctrine in regards to what rights its exhausts with contractual means – Can a simple wording of excluding patents be deemed as an enforceable restriction and thus limit the exhaustion of distribution rights? Would it matter if the restrictions are conditioned with an obligation on licensing under FRAND terms and thus guarantee technology access?

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[43] See Keeler v. Standard Folding Bed Co. 157 U.S. 663-664, 1895, United States v. Univis Lens Co., 316 U. S. 251, 1942 and Opinion of the Court, p. 12-13, Quanta Computer Inc. v. LG Electronics Inc., 316 U. S. 249, 2008.

[44] This is a right which a right holder inherent when giving exclusive control over its property through IPRs, Article 64 EPC and 3§ Swedish Patent law (1967:837).

[45] See i.a. Section 46, Mallinckrodt Inc, v. Medipart Inc. 976 F.2d 700, Fed. Cir. 1992, Compare with section 45, UsedSoft v. Oracle.

# 11. Legal structure

## 11.1 The normative structure of intellectual property

In commercial law, there is an objective of harmonization and that is especially evident in the field of intellectual property. The EU constitute its own legal entity, which also includes its own legal system that is independent of national laws. Member states, including Sweden, are either direct or indirect impacted by EU law; once EU legislation has entered into force it becomes part of each member state´s legal system.

The legal system of the Union is mainly divided into three legal hierarchies; 1) primary legislation, which constitutes of treaties and general principles of law, 2) secondary legislation, which is based on the treaties 3) complementary legislation. The primary goal of EU law is to create a legal hierarchy that makes it possible to achieve the objectives set out in the primary legislation – the treaties. Therefore, are all other legal sources, including EU-directives, national law and international agreements, only valid if they are consistent with the treaties.[46]

EU in turn, is as a member of the TRIPS agreement[47] and a contractual party of treaties produced by WIPO,[48] and is greatly influenced by the constitutional activity amongst members in those organizations, in which its work can be dated back to the later part of the 19th-century. Thus, directives, decisions and other initiatives surrounding intellectual property by EU often have their foundation in WIPO treaties and international agreements. This normative hierarchy structure and intent of harmonization is important to have in mind since this paper includes a comparative analysis of sources of international law.[49]

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[46] U. Bux, 'EU-rättens källor och räckvidd', http://www.europarl.europa.eu/atyourservice/sv/displayFtu.html?ftuId=FTU_1.2.1.html, accessed 2016-10-06.

[47] Agreement on Trade-Related Aspects of Intellectual Property Rights, which is an agreement on the minimum standards of intellectual property, administered by The World Trade Organization (WTO). Overview: the TRIPS Agreement, https://www.wto.org/english/tratop_e/trips_e/intel2_e.htm, accessed 2016-10-10.

[48] World Intellectual Property Organization is a UN body whose objective is to guide and harmonize the development of a balanced and effective intellectual property system that promotes advancements and creativity for everyone's interest. In WIPO's work to develop and harmonize the worlds intellectual property systems it has produced treaties which members can ratify through contractual commitments. Inside WIPO, http://www.wipo.int/about-wipo/en/, accessed 2016-10-10.

[49] G. Lambertz, p. 240, 2000.

## 11.2 The rationale of intellectual property under EU law

The intellectual property system has its rational anchored in two primary objectives: 1) a right holder shall be rewarded for his efforts, and 2) to promote economic and social growth through scientific and technological advancement.[50] On the other side of it is the EU's primary objective of market integration with the free movement of goods, services, people and capital as a result.[51]

Intellectual property per se interferes with EU's main objective of market integration, but it is still perceived as an important objective for the functioning of the internal market. Thus, to balance the conflict between IPRs monopolistic benefits with the free movement of goods and services, EU introduced the exhaustion doctrine in its decision in Deutsche Grammophon v. Metro-SB-Großmärkte, which will be discussed more in detail later.[52]

In order to better understand what legal rational under EU law the exhaustion doctrine is attached to, one must take a closer look at the Articles 34-36 TFEU. Article 34 and 35 states that quantitative restrictions on imports and exports shall be prohibited between member states, while Article 36 states that restrictions can be justified on the grounds of the protection of industrial and commercial property, which also includes IPRs.[53]

However, the treaties, which is part of the primary legislation, is not allowed to prejudice the rules of member states governing systems of property ownership, including the intellectual property system. Thus, the EU is prohibited from having exclusive competence[54] over the field of intellectual property. Still, as the harmonization of IPRs is vital for the market integration, EU appear to attach its rational of harmonization on the Articles 352 and 114 TFEU, which allows exceptions from the treaties for justified reasons. Both the InfoSoc directive[55] and the Computer programs directive[56] were rationalized through Article 114 TFEU, with the purpose of strengthen the functioning of the internal market.[57] The directives on intellectual property

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[50] Article 3 TFEU and G. Tritton, 'Intellectual property in Europe', p. 638, 2008.
[51] See Article 3.3 TEU with Article 26.2 TFEU.
[52] Grounds of judgement, Section 11 and 13, Deutsche Grammophon Gesellschaft GmbH v. Metro-SB-Großmärkte GmbH & Co. KG, C –78/70, 1971.
[53] G. Tritton, p. 641, 2008.
[54] Article 3 TFEU.
[55] Directive 2001/29/EC Harmonization of Certain Aspects of Copyright and Related Rights in The Information Society.
[56] Directive 2009/24/EC on The Legal Protection of Computer Programs.
[57] G. Mazziotti, 'EU Digital Copyright Law and the End-User', p. 37, 2008.

are thus part of the secondary legislation and are binding for member states, but member states are allowed to decide on the exact implementation in national law.[58] The purpose of those directives, especially the Computer programs directive, is important to understand when discussing the possible exhaustion of distribution rights in regards to the CCNx software copies, as it constitute the legal framework for governing copyrights associated with software.

# 12. The introduction of the exhaustion doctrine

## 12.1 Introduction

To understand how the exhaustion doctrine has been adapted and shaped towards the knowledge-based economy, this section will highlight early developments in the industrial economy in both Europe and United States to capture the original intent of the doctrine when it first was introduced. Cases from both continents, especially those that have involved contractual restrictions tied to a sale or license agreement in regards to property, will be highlighted to understand what arguments are used to rationalize possible exhaustions. The discussion is going to include a comparative analysis on the development of the exhaustion doctrine and will include case law and directives on both patents and copyright.

## 12.2 Early development

### 12.2.1 Under American law

An inventor to a patent has typically the right to exclude others from making, using, selling, and offering to sell or import that particular patented matter. This monopoly right works as an incentive from the society to foster innovation and aims to balance competition with granted exclusive rights. With the right, there are also limitations, which serve the purpose of preventing unreasonable compensation to the inventor. The exhaustion doctrine is one of those limitations and the attached rationale is the principle that the initial authorized sale of a patented copy terminates all patent rights to that copy, which terminates the monopoly right to that copy sold.[59]

One of the earlier cases that recognized the doctrine was Keeler v. Standard Folding Bed in 1895 with the notion that a continued monopoly over a product would cause *"inconvenience and annoyance to the public"* and thus *"one who buys patented articles of manufacture from*

[58] Article 4 EUF and Bux, 'EU-rättens källor och räckvidd'.
[59] T. M. Peavey, 'Bowman v. Monsanto: Bowman, The Producer and the End User' in Berkeley Technology Law Journal Volume 29, p. 468-469, 2014.

*one authorized to sell them becomes possessed of an absolute property in such articles, unrestricted in time or place".*[60,61] The Supreme Court reasoned further and held in the light of Adams v. Burke that they could not find a distinction between the right to use a purchased patented copy and the right to resell it, if the sole value of the patented copy is in its use and the right holder has received a reward for it, then he loses his monopoly right to restrict that use further. This implies that once a patentee has received its reward through an authorized sale, the patent law has fulfilled its purpose, but which was already noted in the Keeler v. Standard Folding Bed,[62] an authorized sale includes the at times complex task to identify what triggers an authorized sale and thus what distribution rights that get exhausted.[63,64]

Another case that is important for the development of the exhaustion doctrine is the United States v. Univis Lens from 1942, where the patentee attempted to restrict the purchaser's resale possibilities of a patented copy, such as determining the resale price. When the purchaser did not oblige the restrictions in the agreement it got sued for patent infringement as it contained patentable technology.[65] The Supreme Court held that the sale exhausted the patent holder's monopoly in the copy, stating that a patentee may not after a sale, by the virtue of his patent, control the use or disposition of the copy.[66]

### 12.2.2 Under EU law[67]

Around the same time as the Keeler v. Standard Folding Bed, the German scholar Josef Kohler presented his 'Erschöpfungsteori', which was relatively similar to the exhaustion rationale developed under American law. It implied that the distribution rights become exhausted when the right holder puts its product on the market, though he did not distinct markets by

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[60] Thereof the synonym 'The first sale doctrine' under American law.
[61] Keeler v. Standard Folding Bed, at 666.
[62] Ibid, at 663-664.
[63] T. M. Peavey, p. 468-470, 2014.
[64] M. Ansari, 'LG Electronics, Inc. v. Bizcom Electronics, Inc.: Solving the Foundry Problem in the Semiconductor Industry' in Berkeley Technology Law Journal Volume 22, p. 139-140, 2007.
[65] H. Hovenkamp, 'Innovation and Competition Policy, Ch. 10: Post-sale and Related Distribution Restraints Involving IP rights', p. 11-17, 2013.
[66] United States v. Univis Lens, at 250.
[67] Focusing on the path of the exhaustion doctrine in the EU under Germania law, hence excluding early developments under Latin and Anglo-Saxon law. The reasons for this is because it is the most similar to the exhaustion doctrine that EU and Sweden later adopted, see further in the section.

geographical locations, which would later be adopted in the doctrine. With time, the rationale of the 'Erschöpfungsteori' was adopted by at least the civil laws of the northern European countries, including Sweden, but later also the EU through its decision in Deutsche Grammophon v. Metro-SB-Großmärkte, 1971, where the CJEU stated that if a copy is lawfully put on the internal market, regardless of member state, then all intellectual rights embodied in that copy is exhausted[68]. It did so by referencing to Article 36 TFEU by stating that although one can limit the internal market for the purpose of protecting industrial and commercial property, one cannot limit the internal market further once a copy is put into circulation on the internal market. A further limitation was thus not justified under Article 36 TFEU as it would restrict the free movement of goods and consequently limit the functioning of the internal market.[69]

Another similar case that followed Deutsche Grammophon v. Metro-SB-Großmärkte was the Centrafarm v. Sterling, where Centrafarm imported patented medicinal preparations to the Netherlands from Germany and the UK, where they were put into circulation by Sterling Home. This made Sterling Home file a lawsuit to protect their pricing strategy in the Netherlands, which was significantly more expensive than Germany and the UK.[70] The CJEU held that Sterling had exhausted its distribution rights when it first put its medicinal preparations on the internal market.[71] It attached its rationale to the purpose of the protection of industrial property in Article 36 TFEU by stating *"In relation to patents, the specific subject matter of the industrial property is the guarantee that the patentee, to reward the creative effort of the inventor, has the exclusive right to use an invention with a view to manufacturing industrial products and putting them into circulation for the first time, either directly or by the grant of licences to third parties, as well as the right to oppose infringements".* Thus, once the creative efforts of a patent holder are sufficiently rewarded, the more general goals of the internal market prevail.[72,73]

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[68] H. H. Lidgard, 'Parallellhandel: konsumtion av immaterialrätt i Europa och USA', p. 23-28, 2002.
[69] Grounds of judgement, Section 11-13, Deutsche Grammophon v. Metro-SB-Großmärkte.
[70] Facts and procedure, Centrafarm BV and Adriaan de Peijper v Sterling Drug Inc., C-15/74, 1974.
[71] Court's decision, Section 1, Ibid.
[72] Section 9, Ibid.
[73] See also C. 'Ginter, Free Movement of Goods and Parallel Imports in the Internal Market of the EU' in European Journal of Law Reform, Volume 8, p. 511-512, 2006.

### 12.2.3 Key takeaways and reflections

The early developments of the doctrine are relatively similar under European (and later EU law) and American law. Under both laws it is emphasized that the reward to the right holder shall be balanced to the public good. EU law seem also to attach its rationale more on the importance of the functioning of the internal market rather than a right to property ownership, which is more emphasized under American law.[74]

In general, much of the early case law that was established under EU law was largely about defining geographical markets[75] and later on about the effects on the functioning of the internal market[76], rather than scrutinize the definition of a sale and the related impact of contractual restrictions, which was much more discussed under American law.[77]

# 13. The adaptation of the exhaustion doctrine to the knowledge economy

## 13.1 Introduction

By the later part of the 20th century, the economy started to shift towards a more knowledge-based economy, where the focus for businesses started to change from property ownership to the focus of intellectual capital and services. Thus, new business models are introduced to adapt to this new shift, where often IPRs are traded as part of business models to firms positioned in different facets of verticals, often through different type of licensing constellations. This section will present and analyse cases that epitomize this shift to highlight the adaptation of the exhaustion doctrine to the knowledge economy and in particular transactions involving licenses.

## 13.2 Quanta Computer v. LG Electronics

A modern American case law that highlighted this adaptation of the exhaustion doctrine is Quanta Computer v. LG Electronics from 2008, where LG Electronics entered into a patent license agreement granting Intel the right to make and sell microprocessors. LG Electronics placed a restriction in the licensing agreement stating that the licensed products could not be

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[74] I.a. compare Grounds of judgement, Section 13, Deutsche Grammophon v. Metro-SB-Großmärkte with Keeler v. Standard Folding Bed, at 666.
[75] H. H. Lidgard, p. 28-40, 2002.
[76] See Section 8, Centrafarm v Sterling, Grounds of judgement, Section 13, Deutsche Grammophon v. Metro-SB-Großmärkte.
[77] I.a. United States v. Univis Lens, at 253. and Keeler v. Standard Folding Bed, at 661.

licensed to a third party for the combination of other products, such as other parts of a computer. Additionally, the license agreement stated that Intel should include a patent notice when they sold the microprocessors stating the licensed products could not be combined with other products. However, Intel sold the licensed microprocessors to Quanta Computer, who subsequently manufactured computers containing the microprocessors, thus breaching the license agreement between LG Electronics and Intel. Quanta Computer incorporated the microprocessors according to Intel's specification and as a result, Quanta Computer infringed LG Electronics patents, which led to LG Electronics suing Quanta Computer for patent infringement.[78]

Quanta prevailed in the District Court, but upon appeal, the Federal Circuit held that LG was allowed to restrain the license with post-sale restrictions, by referring to the ruling in Mallinckrodt v. Medipart, which will be discussed more further down. Yet, the Supreme Court unanimously reversed the decision by the Federal Circuit, stating that the placed post-sale restrictions did not hinder the exhaustion of distribution rights in regards to the microprocessors.[79] The Supreme Court argued that the intended and reasonable use for the microprocessors were to incorporate them in computers, and since Intel had a right to use and sell the microprocessors without any field limitations, Quanta Computer did not need a third-party license from LG Electronics to acquire the microprocessors.[80] They bought them from a lawfully seller in Intel and therefore avoided the need for a grant of a third-party license to incorporate the microprocessors in computers.[81]

The Supreme Court reversed the Federal Circuit's decision, but failed to provide clarity on a patentee's possibility to restrict the exhaustion of distribution rights of a licensed copy.[82] One of LG Electronics arguments was in line with the outcome in Mallinckrodt v Medipart decision, where the Federal Circuit stated that a patentee could condition the sale of a patented copy with a restrictive notice.[83] The decision in the Mallinckrodt case was criticized for not being in line with previous decisions and thus it was expected that the Supreme Court would shed some light

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[78] T. M. Peavey, p. 474-475, 2014.
[79] Opinion of the Court p. 18, Quanta Computer v. LG Electronics.
[80] Opinion of the Court p. 12-13, Ibid.
[81] Opinion of the Court p. 18, Ibid.
[82] H. Hovenkamp, 'Post-Sale Restraints and Competitive Harm The First Sale Doctrine in Perspective', p. 115-116, 2011.
[83] Syllabus, Mallinckrodt v. Medipart.

to the decision's wider meaning.[84] However, the Supreme Court never assessed the restrictions as they interpreted the licensed microprocessors as an authorized sale within the patent grant and not a conditional license.[85] Thus, it still remains unclear to what extent a patentee can use a conditional license to impose restrictions on downstream purchasers.

To summarize the outcome of Quanta Computer v. LG Electronics; the Supreme Court followed the same route as in United States v. Univis Lens and held that the exhaustion doctrine is triggered by an authorized sale of a patentable copy when the intended and reasonable use is to practice the patent, and the copy substantially embodies the patented invention by embodying its essential features.[86]

### 13.2.1 Under EU law

This new interpretation of the doctrine under American law, where a copy embodying parts of a patent can still exhaust the distribution right, has not been reflected under European law. Hence, the applicability of the Supreme Court's reasoning under EU law is debatable. However, there is nothing under EU law that would hinder the same logic to be applied, albeit older German case law has indicated that patent rights are only exhausted in full if the licensee used the licensed patent in full.[87]

### 13.2.2 Key takeaways and reflections

This case is indeed interesting for the CCNx software and especially in regards to the restriction of patents. Firstly, the US Supreme Court strengthened the exhaustion doctrine and gave it precedence before contractual limitations on patents as the license agreement was irrelevant due to the exhaustion of LG Electronics distribution rights through the sale of the microprocessors.[88] This may limit PARC's ability to restrict the use of patents through the license agreement if PARC's distribution rights were deemed to be exhausted.

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[84] See i.a. M. R. Patterson, 'Contractual Expansion of the Scope of Patent Infringement Trough Field-of-use Licensing' in William & Mary Law Review, Volume 49, p. 168, 2007. And Y. Even, 'Appropriability, First Sale & Exhaustion', p. 41-42, 2009.
[85] Opinion of the Court p. 13, Quanta Computer v. LG Electronics.
[86] Opinion of the Court p. 19, Quanta Computer v. LG Electronics.
[87] D. Kamlah et. al., 'Exhaustion of "software" patents', https://www.taylorwessing.com/download/Article_software_patents.html, accessed 2016-10-21.
[88] Opinion of the Court, p. 19, Ibid.

Secondly, and perhaps the most important aspect of the decision, it put considerable emphasis on the intended and reasonable use of the patented article in question. The argumentation by the Supreme Court referred to the United States v. Univis Lens, where they reasoned that even though a patentee sells a patented copy that does not include all essential features of a patent it can still exhaust the distribution rights of the patent holder if the intended and reasonable use of the patented copy is to use it as if it embodied all essential features. The Supreme Court summarized the conclusions from the United States v. Univis Lens as *"The Court concluded that the traditional bar on patent restrictions following the sale of an item applies when the item sufficiently embodies the patent—even if it does not completely practice the patent—such that its only and intended use is to be finished under the terms of the patent."*[89]

Quanta Computer argued that the only intended and reasonable use for the microprocessors were to incorporate them into computers and thus making them functioning and practicing the patents.[90] LG Electronics failed to give another viable option for the use of the microprocessors and the court could not discern one either.[91] The Supreme Court concluded that although the patens are practiced first when Quanta Computer incorporates them in their computers, the only intended and reasonable use when LG Electronics sold the microprocessors to Intel were in fact to incorporate them into computers and thus practicing the patents.[92]

There are some interesting similarities between the case and the CCNx software, as the patents in the software are not practiced once the code is downloaded, but instead when applying it into a process in a computer which creates functionalities that are patented by PARC. It seems that the only intended and reasonable use of the CCNx code is to apply the code in a process; in fact, it can be argued that the only intended and reasonable use of software code in general is to create functionalities and thus give it utility. Just as microprocessors are incorporated in a computer in Quanta Computer v. LG Electronics[93] and the polishing of the licensed lenses in United States v. Univis Lens.[94] On the other hand, software is a different type of medium and

[89] Opinion of the Court, p. 8, Ibid.
[90] Opinion of the Court, p. 11, Ibid.
[91] Opinion of the Court, p. 12-13, Ibid.
[92] Opinion of the Court, p. 18-19, Ibid.
[93] Opinion of the Court, p. 18-19, Ibid.
[94] United States v. Univis Lens, at 250.

can be applied in many possible ways to create different functionalities, which perhaps does not make it as definite as microprocessors and lenses.

Additionally, a key factor for exhaustions in both Unitd States v. Univis Lens and Quanta Computer v. LG Electronics was that a material part of the patented invention was already featured in the copy and the only step left to practice the whole patent was the application of a common processes or the addition of standard parts; no creative or inventive decisions regarding the patented copy was needed but placing it in a process or ad standard parts.[95] The creation of software, where the CCNx code is applied with perhaps new code does likely require some creativity to be useful. Hence, it could be argued that the CCNx code does not, as the license states, contain patents in any way; at least as long as the code is not applied as part of a standardized process. However, if a licensee would apply the code as it is in a computer and consequently patented functionalities would appear, it could then be argued that no creative or inventive decisions has been made by the licensee.[96]

### 13.3 Bowman v. Monsansto

Another American case law that reasoned on the intended and reasonable use of patents, but with a different outcome was Bowman v. Monsanto from 2013. The case involved gene-modified patented seeds that were licensed to farmers under a limited use license that restricted the farmers to use the seeds for more than one season. After the use, the farmers could either consume the resulting crops or sell it to the local grain elevator; both were within the license grant. Farmer Bowman purchased some of these used seeds from the local grain elevator, which were now soybeans ready for consumption and subsequently replanted them for his second harvest. Monsanto, which had patented the seeds and was the original licensor filed a lawsuit claiming Bowman was not allowed to replant the seeds without a license.[97]

The Supreme Court held that the exhaustion doctrine was applicable on Monsanto's distribution rights of the licensed seeds, but not on the reproduction of new corps – the soybeans.[98] The court argued that the exhaustion of distribution right shall apply when the patentee has received his reward by the sale of the copy and in this case, Monsanto had only received its reward for

[95] Opinion of the Court, p. 13-15, Quanta Computer v. LG Electronics.
[96] H. Hovenkamp, 'Innovation and Competition Policy', p. 17-26, 2013.
[97] Syllabus, Bowman v. Monsanto Co., 11-796 US, 2013.
[98] Opinion of the Court, p. 5, Ibid.

the actual copy sold – the initial seeds in the initial license, and not for the subsequent recreations of it – the soybeans.[99] The court further argued that if copying was allowed under the exhaustion doctrine, a patent would plummet in value after the first sale of the copy containing the invention and that would create a mismatch between invention and reward.[100]

### 13.3.1 Under EU law

EU has a similar view on the exhaustion doctrine in regards to licensed seeds, and released Directive 98/44/EC on Biotechnology in 1998 to provide clarity on the reproduction of patented seeds. In Article 10 it is stated that exhaustion does also apply on biological material that is obtained from the propagation or multiplication of a patented biological material, if the multiplication or propagation are necessarily results from the applied patentable biological material. However, it does not include the right to subsequently use it for further propagation or multiplication. Thus, it would be likely that a court under EU law would come to the same conclusions in the Bowman v. Monsanto case as the US Supreme Court.

### 13.3.2 Key takeaways and reflections

Although, the case was about licensed seeds, it still provides some valuable insights in regards to software licensing. Bowman in this case, tried to broaden the exhaustion doctrine's scope by also arguing to apply it on the distribution rights of the reproduction, as a reproduction was within the valid use of the license agreement.[101] The court dismissed, what they would call, 'blame the bean argument' by arguing that Bowman controlled the reproduction through the action of planting the seeds for a second time.[102] This means that even though the distribution rights of the downloaded CCNx code copy would be exhausted, it would likely not include the subsequently copies of the code. The exhaustion doctrine would thus only be applicable on the distribution rights of that particular copy that is downloaded, preventing actors of reproducing the code for multiple implementations.

After the decision, Bowman's view was supported by Professor Jeremy N. Sheff, who pointed out that *"The only and intended use of seeds or any other self-replicating technology necessarily makes a newly infringing article – this is the defining characteristic of self-*

[99] Opinion of the Court, p. 4-5, Ibid.
[100] Opinion of the Court, p. 8, Ibid.
[101] Syllabus, Bowman v. Monsanto.
[102] Opinion of the Court, p. 9, Ibid.

*replicating technologies".*[103] It is unclear what implications the decision has on self-replicated technology other than gene modified seeds, as the court intentionally avoided to make any wider marks on self-replicated technology, including self-replicated software.[104]

With the rationale of Professor Sheff, it could perhaps be argued that reproduction of the CCNx software copy is within the valid use of the agreement, as the purpose with the Open Source model is in fact to make copies to implement the software vertically to different users. However, a premise for self-replicating software is that a user does not have the control over the reproductions of the software copies.[105] In CCNx case, a user that download the code do in fact have the control over the reproductions as the user can chose to not implement it further. Thus, it is rather unlikely that a court would see it as a valid use and the consensus today is that the exhaustion doctrine does not include the right of producing reproductions.[106]

## 13.4 The Adaptation of the exhaustion doctrine to licensed software

### 13.4.1 Under American law

The Quanta Computer v. LG Electronics case was ruled in favour of the exhaustion rule, but recent case law regarding copyrighted software licenses under American law have given contractual restrictions precedence over the exhaustion rule.[107] In Vernor v. Audodesk from 2009, the United States Court of Appeals for the Ninth Circuit held that a software user shall be regarded as a licensee rather than an owner of a copy when it is clearly stated that the user is granted a license that significantly restrict the user's ability to transfer the copy and imposes notable use restrictions The court stated: *"We hold today that a software user is a licensee rather than an owner of a copy where the copyright owner (1) specifies that the user is granted a license; (2) significantly restricts the user's ability to transfer the software; and (3) imposes notable use restrictions".*[108]

In the case, Vernor resold used software from Autodesk on Ebay, and the exhaustion doctrine was first held to be applicable in the District Court but later got overturned by the United States

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[103] T. M. Peavey, p. 486, 2014.
[104] Opinion of the Court, p. 10, Bowman v. Monsanto.
[105] "Outside the purchaser's control", see Opinion of the Court, p. 10, Ibid.
[106] See also further below on CJEU's reasoning in UsedSoft. v. Oracle, where it was stated that the exhaustion is only applicable on the licensed software copy.
[107] See also Capitol Records, LLC v. ReDigi Inc, 12-0095 US District, 2012.
[108] Section 4B(5), Vernor v. Autodesk, Inc., 09-35969 9th Cir., 2009.

Court of Appeals for the Ninth Circuit.[109] Autodesk's license agreement was perpetual, but included several use restrictions such as non-transferable, and prohibited modifying, translating, copying or reverse-engineering the software, and stated further that failure to comply with the licensing restrictions would result in a termination.[110] The Ninth Circuit concluded that these licensing restrictions were enough for Autodesk to reserve ownership to the software and that it was not a misuse[111] of their copyright.[112]

It rejected Vernor's claim that the license should be regarded as a sale as it was a perpetual license not restricted in time, by concluding that a perpetual license is not dispositive for sale and that other licensing terms restricting the use need to be taken in consideration as well.[113]

However, it did acknowledge the value of the arguments for recognizing such software transactions as sales and noted that the Congress could amend the statute if it wants a different outcome but that the court is bound by law and its precedence.[114]

### 13.4.2 Under EU law

Perhaps the most important decision regarding the exhaustion doctrine's interpretation on software licenses in UsedSoft v. Oracle from 2012, where a software license was deemed as a sale and held the copyright holder's distribution rights to the copy exhausted.[115]

Oracle claimed that UsedSoft had committed copyright infringement on their Client-Server-Software. Oracle licensed software directly downloadable from their webpage to companies, including the right to save copies on the workplace internal servers and share it to a limited number of users. Within the grant of the licensing agreement, there was also a service clause stipulating that regular updates can be downloaded from Oracle's webpage.[116] Under the conveyed rights, amongst others, the following provision was stated: "*With the payment for*

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[109] Section 4A, Ibid.
[110] Section 1A, Ibid.
[111] See the misuse test below.
[112] Section 6, Vernor v. Autodesk.
[113] Section 4C(1), Ibid.
[114] Section 5, Ibid: "These are serious contentions on both sides, but they do not alter our conclusion that our precedent from Wise through the MAI trio requires the result we reach. Congress is free, of course, to modify the first sale doctrine and the essential step defense if it deems these or other policy considerations to require a different approach".
[115] Section 88, UsedSoft v. Oracle.
[116] Section 21, Ibid.

*services you receive, exclusively for your internal business purposes and for an unlimited period, a non-exclusive, non-transferable user right, free of charge, in respect of everything which Oracle develops and makes available to you on the basis of this agreement*".[117]

UsedSoft business model was to buy used software licenses and then resell them to new users. After the resale, UsedSoft customers could download the software directly from Oracle's webpage or if it was already downloaded, copying it, according to the user licensing agreement.[118]

Oracle believed that UsedSoft's business model infringed their license agreements and filed a lawsuit under German law.[119] Eventually, the German Supreme Court - The Bundesgerichtshof, asked the CJEU for guidance on the interpretation of the Article 5.2 and the first section of Article 4.2 in the Computer programs directive.[120,121]

The following wording can be found in the first section of 4.2: *"The first sale in the Community of a copy of a program by the rightholder or with his consent shall exhaust the distribution right within the Community of that copy…".*[122]

The CJEU interpreted it that the licensing agreement and the associated software copy, between Oracle and its licensed customers can each be regarded as a first sale within the Community.[123] It argued that the commonly accepted definition of a 'sale' is when one person's ownership of property, tangible or intangible, transfers to another person, in exchange for reimbursement.[124] Hence, the court analysed the transaction in question and not the agreement as such, and stated that since the licensing agreement conveyed a perpetual right to the software copy and Oracle obtained a remuneration corresponding to the economic value of the creation, it shall be regarded as a sale and not a license, according to the first section of Article 4.2.[125]

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[117] Section 23, Ibid.
[118] Section 24 and 26, Ibid.
[119] Section 27, Ibid.
[120] For the purpose of this paper, only the interpretation of Article 4.2 is of interest, hence this analysis will exclude the interpretation of Article 5.2.
[121] Section 34, UsedSoft v. Oracle.
[122] Article 4.2, Directive 2009/24/EC on The Legal Protection of Computer Programs.
[123] Section 77, UsedSoft v. Oracle.
[124] Section 42, Ibid.
[125] Section 45 and 88, Ibid.

The Advocate-General remarked in his proposition that the term 'sale' in Article 4.2 shall be given a broad interpretation and include all type of beneficial rights that includes a license, for an unlimited period, and where the right holder receives a compensation for the copy that correspondents to the value of the creation. Otherwise the effectiveness of the exhaustion doctrine would be undermined, since it would be merely enough to name agreements as 'license' and not 'sale' to circumvent the triggering of the rule.[126]

Since it is an intangible copy and not a physical product that was put into circulation, the court noted that the seller, in this case Oracle's customers are obliged to make the copy unusable, otherwise it would be regarded as copying and that is not within the scope of the exhaustion doctrine.[127]

The court further commented on the possible exhaustion of service agreements, such as maintenance agreements that are separable from a 'sale' and reasoned that such distribution rights cannot be exhausted, perpetual or not as they are regarded as services.[128] However, corrected functionalities that are within the service agreement's grant that have been altered or added (e.g. patches and updates) on a downloaded software copy shall be regarded as an integral part of the original copy and thus be included in the original sale.[129]

The judgment was the first concerning the adaption of the exhaustion doctrine on intangible mediums under EU law and the interpretation of the computer directive. Until UsedSoft v. Oracle, it was widely regarded that the character of the performed transaction was the determinate factor when accessing distribution.[130] In UsedSoft v. Oracle, the CJEU abandoned that notion in favour of emphasizing on the economic consequences of the transaction, meaning whether the right holder has been reasonable compensated and if a transfer has occurred.[131,132]

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[126] Section 49, Ibid.
[127] Section 70 and 78, Ibid.
[128] Section 62 and 66, Ibid.
[129] Section 67, Ibid.
[130] The exhaustion doctrine was considered to only apply on distribution rights for physical products and distribution through intangible mediums were regarded as having the character of 'services', See i.a. Europeiska Kommissionen, Grönbok - Upphovsrätt och närstående rättigheter i informationssamhället, p. 45, 1995, Directive 2001/29/EC Harmonization of Certain Aspects of Copyright and Related Rights in The Information Society, and Football Association Premier League Ltd and Others v QC Leisure and Others, C-403/08 and Karen Murphy v Media Protection Services Ltd, C-429/08, 2011.
[131] Section 49, 61 and 88, UsedSoft v. Oracle.
[132] R. M. Hilty, 'Exhaustion in The Digital Age', p. 13, 2015.

Thus, it is concluded that the exhaustion can also apply on a copyright holder's distribution rights on licensed software, albeit it is dependent on the circumstances surrounding the agreements.[133]

### 13.4.3 Key takeaways and reflections

As expected, the judgment was well-debated and some meant, including Oracle during the trials, that the offering of the licenses should have been regarded as offerings to the public and therefore cannot give rise to the exhaustion of the distribution rights of the copy.[134] This would have been in line with the previous Coditel cases,[135] where TV-programs deemed to be public offerings and therefore excluded from the exhaustion doctrine. Many also praised the CJEU's position on the matter and agreed with the Advocate General that it would be quite easy to circumvent the exhaustion doctrine with just labelling it a license, and that would not be in line with the purpose of the doctrine.[136]

As previously mentioned, one of the primary objectives of the EU is the functioning of the internal market. According to Professor in intellectual property law Paul Torremans, this points to the exhaustion doctrine being the norm rather than the exception of the rules on copyright infringement. Therefore, the CJEU ruling in UsedSoft v. Oracle was expected since digital and physical copies are economic and functional comparable.[137] Also, Dr. Christopher Stothers underlined the fact that the court placed considerably emphasis on the exhaustion doctrine's and the internal market's effectiveness, implicating that future right holders better construct

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[133] It should be noted that the Computer directive is lex specialis and that the CJEU seem to only apply the exhaustion doctrine on intangible mediums in regards to software, which is protected under the Computer directive. See i.a. Nintendo Co. Ltd et. al. v. PC Box Srl and 9Net Srl, C‑355/12, 2014.
[134] Section 50, UsedSoft v. Oracle.
[135] Coditel Brabant SA v Commune d'Uccle and Région de Bruxelles-Capitale, C-324/07, 2008, and Coditel SA, Compagnie générale pour la diffusion de la télévision, and others v Ciné-Vog Films SA and others, C-262/8, 1982.
[136] See i.a. the personal opinons of L. Determann in 'Software Copyright's Oracle From The Cloud', p. 183, 2015, and L. G. Grigoriadis in 'The distribution of software in the European Union after the decision of the CJEU' "UsedSoft GmbH v. Oracle International Corp." ("UsedSoft") in journal of International Conmercial Law and Technology Volume 5, p. 118, 2013.
[137] P. Torremans, 'Holyoak and Torremans Intellectual Property Law', p. 3, 2013.

their contracts in a way that they do not hinder the objective of the free movement or the unlawful competition rule in Article 101 TFEU.[138]

Like several of the mentioned cases under both American and EU law,[139] the CJEU put considerably emphasis on the reward aspects of the creation.[140] This is perhaps one of the strongest arguments against an exhaustion of the distribution rights of the CCNx software copy since PARC do not get any economical compensation for its creations and that seems to be one of the fundamental cornerstones of the exhaustion doctrine.[141] Though, the CJEU expressly stated that the economic reimbursement for the software was a determine factor it shall not exclude the possibility of a different type of compensation than an actual payment. Both the Advocacy General and the US Supreme Court have expressed and used the term compensation or reward, which does not exclude other options of compensations.[142] In fact, the US Federal Circuit explicitly pointed out in Jacobsen v. Katzer that an Open Source license can provide the licensor substantial benefits that are non-monetary economic considerations,[143] and thus perhaps make such considerations equally justifiable. Although the Jacobsen case investigated in a potential implicit patent license in an Open Source license and not the exhaustion doctrine as such, the underlying principle of IPR holder receiving consideration is the same in both doctrines.[144] The value of Open Source is typically much more than just a licensing fee as there can be many benefits with it. As Professor of Law David McGowan points out *"Open source software presents a challenge to conventional thinking about the copyright reward system. The*

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[138] C. Sothers, 'When is Copyright Exhausted by a Software Licence?' UsedSoft v Oracle, p. 791, 2012.
[139] I.a. Bowman v. Monsanto, Adam v. Burke, Deutsche Grammophon v. Metro-SB-Grossmärkte and Centrafarm v. Sterling Drug.
[140] Section 45 and 88, UsedSoft v. Oracle.
[141] See section 11.2.
[142] Section 49, UsedSoft v. Oracle and i.a. United States v. Univis Lens at 251.
[143] Section 2A, Jacobsen v. Katzer, 535-1373 F.3d, 2008, "Traditionally, copyright owners sold their copyrighted material in exchange for money. The lack of money changing hands in open source licensing should not be presumed to mean that there is no economic consideration, however. There are substantial benefits, including economic benefits, to the creation and distribution of copyrighted works under public licenses that range far beyond traditional license royalties".
[144] C. H. Nadan, 'Closing the Loophole: Open Source Licensing & the Implied Patent License', p. 3-4, 2009.

*point of the system is to produce useful code at the lowest cost and distribute it as widely and quickly as possible. The point is the code, not the reward".*[145]

By releasing software through the CCNx license, PARC receives the benefits of creating an infrastructure platform (and possibly a de facto standard) with their reputation and technology as well as valuable feedback and progression from users. That may be exceedingly more valuable than any potential licensing fee that they would be able to obtain from licensing. If those benefits would correspond to the value of PARC's efforts, then perhaps PARC would be seen as rewarded despite not receiving any monetary compensation. On the other hand, without monetary returns on investments in R&D PARC and other similar companies would likely stop contributing to advancements in science and the purpose with the IPR-system would be inadequate.[146]

Just as in Bowman v. Monsanto,[147] the CJEU stated that the exhaustion doctrine does not apply on the distribution rights on additional copies and if the licensee resells its software license it needs to make their copy of the software unusable. The rationale behind it, is that the licensor has only received a reward for that particular licensed copy and thus would a right to make copies not correspond to the reward of the innovation.[148]

Vernor v. Autodesk and UsedSoft v. Oracle were both very similar, yet had two different outcomes. In Vernor v. Autodesk the court again attached its rationale to a property ownership,[149] whereas the CJEU again emphasized more on the functioning of the internal market.[150] Both Autodesk and Oracle's licenses are arguably more restrictive in their terms than the CCNx license, as the CCNx license includes a perpetual grant to use, modify and distribute code. This could indicate that the exhaustion doctrine would be applicable on at least PARC's copyrighted distribution rights to the software, at least under EU law, but then a key question would be if it consequently would apply on the distribution rights of patents as well.

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[145] D. McGowan, 'Legal Implications of Open-Source Software', p. 65, 2001.
[146] See section 11.2.
[147] Opinion of the Court, p. 4-5, Bowman v. Monsanto.
[148] Section 70, UsedSoft v. Oracle.
[149] I.a. Compare Section 6, Vernor v. Autodesk. with Keeler v. Standard Folding Bed, at 666.
[150] I.a. Compare Section 41 UsedSoft v. Oracle to Grounds of judgement, Section 13, Deutsche Grammophon v. Metro-SB-Großmärkte.

# 14. License constellations and its effect on the exhaustion doctrine

## 14.1 The misuse test

American law introduced the misuse test in conjunctions of the mentioned case Mallinckrodt v. Medipart from 1992. The Federal Circuit stated that *"unless the condition violates some other law or policy (in the patent field, notably the misuse or antitrust law)"* patentees are free to impose contractual post-sale restrictions on customers under a rule of reason.[151] The determining criteria for imposing such restrictions, was according to the Federal Circuit, *"whether restriction is reasonably within the patent grant, or whether the patentee has ventured beyond the patent grant and into behaviour having an anticompetitive effect not justifiable under the rule of reason"*.[152]

The Federal Circuit also commented that a restriction on the use of a patent can be created either by agreement with the first licensee or by the patentee's attachment of a notice to the patented good.[153] Since not all restrictions violates antitrust laws or are reasons that would be contrary to public policy,[154] the Mallinckrodt case created a stand-alone patentee-initiated exception to the exhaustion doctrine – the so called misuse test to deem whether a licensing arrangement is too restrictive or not: *"To sustain a misuse defense involving a licensing arrangement not held to have been per se anticompetitive by the Supreme Court, a factual determination must reveal that the overall effect of the license tends to restrain competition unlawfully in an appropriately defined relevant market"*. This test can be applied on misuses not involving price fixing or tie-ins and does not require any rule-of-reason or relevant market analysis.[155]

The misuse test had previously been applied in National Lockwasher v. George K. Garrett from 1943, where the patentee was using its patent to restrict licensees to not deal in the technology

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[151] Rule of reason is a judicial doctrine of antitrust law under American law which says a trade practice violates the Sherman Act only if the practice is an unreasonable restraint of trade, based on economic factors. See further on Rule of Reason Law and Legal Definition, https://definitions.uslegal.com/r/rule-of-reason/, accessed 2016-12-05.
[152] Opinion of the Court, Id. 572 F.2d at 784, 198 USPQ at 98., Mallinckrodt. v. Medipart.
[153] Background (Bauer, 229 U.S. at 17, 33 S. Ct. at 619.), Ibid.
[154] Public policy is the means by which a government maintains order or addresses the needs of its citizens through actions defined by its constitution, See further on 'What is Public Policy? - Definition, Types, Process & Examples', http://study.com/academy/lesson/what-is-public-policy-definition-types-process-examples.html, accessed 2016-12-06.
[155] Opinion of the Court (Id. 782 F.2d at 1001-1002, 228 USPQ), Mallinckrodt v. Mediapart.

area of the patentee's competitors. The Court found that the restriction was a misuse and thus held the restriction unenforceable.[156]

Several cases[157] have followed the Federal Circuit's decision in Mallinckrodt of applying the misuse test and being rather liberal with contractual restraints, which limits the exhaustion rule to apply. However, these cases are considered to diverge from the Supreme Court's precedencies and reasoning of giving the exhaustion doctrine a broader interpretation, especially the mentioned Quanta Computer v. LG Electronics. Thus, many believed the Supreme Court would overturn the Mallinckrodt decision after their precedent in Quanta Computer v. LG Electronics, but instead they sidestepped the issue. Instead, the Federal Circuit called for en banc briefing[158] in 2015 to decide whether the Mallinckrodt decision should be overruled in the light of Quanta, but in a 10-2 voting, it reaffirmed the validity of Mallinckrodt.[159,160]

### 14.1.1 Key takeaways and reflections

The EU do not have a similar misuse test to apply, but the US courts rational on competition policy seem to be in line with CJEU's rational in earlier cases when assessing restraints.[161] The court highlighted in UsedSoft v. Oracle the importance of removing differences between the laws of Member States that have adverse effects on the functioning of the internal market.[162] Indeed, the functioning of the internal market only works if it can stay effective without any unnecessary restrictions on the competition.[163]

If the misuse test would be applied on the CCNx software objectively without any emphasis on the counterpart, this study would suggest that it would be hard to point out a direct factual

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[156] Opinion of the Court, National Lockwasher Co. v. George K. Garrett Co., 137 F.2d 255 3d Cir., 1943.
[157] I.a. Vernor v. Autodesk, USA, Inc. v. DGI Techs., Inc., 166 F.3d 772, 793 5th Cir. 1999 and Univ. of Rochester v. G.D. Searle & Co., 358 F.3d 916 Fed. Cir., 2004.
[158] Meaning the case is later reheard by the full court. See further on 'En Banc', http://www.techlawjournal.com/glossary/legal/enbanc.htm, accessed 2016-12-06.
[159] H. Hovenkamp, 'Post-Sale Restraints', p. 115-116, 2011.
[160] United States Court of Appeals for the Federal Circuit, Lexmark International, Inc. v. Impression Products, Inc in Brief of Amicus Curiae Intellectual Property Owners Association on Hearing En Banc in Support of Plaintiff-Appellee and Cross-Appellant Lexmark, p. 11-23, 2015.
[161] See Section 12.2.2.
[162] Section 41, UsedSoft v. Oracle with Article 114 TFEU.
[163] Compare to Section 9, Centrafarm v Sterling. See also C. Ginter, p. 511-512, 2006.

determination of PARC's behavior to have anti-competitive effect. The license indeed states that everybody can use the code and the FRAND licensing terms includes a right for every actor to get a license on fair and reasonable terms. However, EU does not require the same test and with EU's intention of removing adverse effects on the function of the internal market it is plausible that PARC's restrictions would be recognized as an obstacle to the free movement of goods and thus not concluding the licensing restriction enforceable.[164]

## 14.2 The field of use license

### 14.2.1 Under American law

The Supreme court argued in the Quanta Computer v. LG Electronics that if LG Electronics had restricted the patent grant to a field-of-use restriction, like in the General Talking Pictures v. Western Electric from 1938, instead of trying to control the post-sales, it would possibly be regarded as an enforceable license.[165]

General Talking Pictures v. Western Electric concerned a post-sale field-of-use license to manufacture a sound system, with the restriction of non-commercial use.[166] The Supreme Court upheld the restriction and confirmed that an owner may place restriction on his license for use in only one or several distinctive fields. Since a transaction outside the field of use to downstream licensees or purchasers had not been 'authorized' by the patentee in the original license no exhaustion could be applied on the distribution rights of the sound system and thus were the restrictions enforceable and valid.[167,168] Professor of law Mark R. Patterson suggest that it is possible according to American patent law to restrict resale or use of a patented software Article after its first sale in a field-of-use license, but it shall be considered 'unusual' and must be clearly articulated in the contract.[169]

### 14.2.2 Under EU law

In contrary to American Law, field-of-use license is established in the EU by regulation and not by precedence, namely through the European Commission's Technology Transfer Block

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[164] I.a. Section 41, UsedSoft v. Oracle and Article 114 TFEU.
[165] Opinion of the Court, p. 16-17, Quanta Computer v. LG Electronics.
[166] Syllabus, General Talking Pictures Corp. v. Western Elec. Co., 304 U.S. 175, 1938.
[167] Ibid., at 185.
[168] H. Hovenkamp, 'Post-Sale Restraints', p. 138, 2011.
[169] M. R. Patterson, p. 209-212, 2007.

Exemption Regulation (TTBER) and its accompanying Guidelines. Such license *"must be defined objectively by reference to identified and meaningful technical characteristics of the licensed product"* if covered by the block exemptions and certain hardcore restrictions, which typically technology transfer agreements are.[170] This is a considerably more demanding approach for licensors than under American law, which views any restrictions on the use of a license as a field-of-use license. Hence, it would for example accourding to Patterson be doubtful if the CJEU would view the license in above mentioned Mallinckrodt v. Medipart as a field-of-use.[171,172]

### 14.2.3 Key takeaways and reflections

The TTBER regulation refers to competition policy and is outside of the scope of the paper, but it still offers some interest for PARC's case as all agreements concluded between two parties for licensing IPRs for the production of goods and services are covered by the regulation.[173] There is no general formula for how contracts should be constructed to not run the risk of unlawful competition, as cases are decided based on a number of different factors, including many external factors. However, it seems that if PARC would have applied a field-of-use restriction by clearly stating the *"technical characteristics of the licensed product"*, instead of a general exclusion of all patents, it would likely have more characteristics of a beneficial right and thus would more likely to keep the ownership of the software copies.[174] This is of importance, since a right holder cannot control a product through a field-of-use license once a product is subject of exhaustion through a transfer of ownership. A right holder has no right under intellectual property laws to prevent sales by licensees of such products incorporating the licensed technology.[175] With a clear field-of-use restriction, PARC would never perceive to have authorized a sale in the first place. At least under EU law, it seems that a general exclusion of all patents is not sufficient enough to hinder a licensor to claim ownership of property.[176] On the other hand, it would perhaps be difficult for PARC to limit the CCNx license to a license

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[170] Section 209, TTBER Guidelines with Article 2 and 4 TTBER.
[171] In the Mallinckrodt v. Medipart, it was deemed enough to just restricted the license with a "single use only" label to make the license valid.
[172] M. R. Patterson, p. 172-176, 2007.
[173] Section 7, TTBER.
[174] Section 209, TTBER Guidelines.
[175] Section 2.1.6, TTBER Guidelines.
[176] It should be noted that this conclusion is to a large extent based on the TTBER Guidelines, which only serves as recommendations for how to apply art 101 TFEU, TTBER.

that clearly describes the technical characteristics of the product, i.e. the functionality which the patents cover. It would likely make the license very narrow, complicated and ineffective, as the purpose with the CCNx project is arguably to create a standardized infrastructure technology.

### 14.3 The implied license

Another plausible interpretation of the CCNx software, besides an exhaustion, is that the license contains an implied license to use the patents that are infringed when using the software. Many scholars do in fact believe that there is an implied patent license in most or at least some Open Source licenses, although it is often well-debated.[177] The idea of implied license is a legal fiction that grants a user to use a patented subject matter that is incorporated in a licensed or purchased medium, which has been lawfully acquired with the consent of the patent holder, but without the explicit grant of using the patents that are embodied in the medium. It would be irrational to not permit such license since the patent holder would essentially invite infringement in such cases.[178]

While the software law in the EU already recognizes the 'implied license' under the exhaustion doctrine,[179] American law has it as a separate doctrine but interpreted with the same meaning. The scope of rights in such license can differ, especially in regards to implied license by legal estoppel where there have been cases where future overlapping patents have also been within the scope of such implicit license grant.[180] The implied license has overruled and interpreted several contractual arrangements trying to limit the scope of patent grants, most notably Univis lens.[181,182]

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[177] M. Webbink, 'Packaging Open Source in International Free and Open Source Software Law Review', p. 83-98, 2010.
[178] R. M. Hilty, p. 4, 2015.
[179] See for example Article 5.1, Directive 2009/24/EC on The Legal Protection of Computer Programs. 'In the absence of specific contractual provisions, the acts referred to in points (a) and (b) of Article 4(1) shall not require authorisation by the right holder where they are necessary for the use of the computer program by the lawful acquirer in accordance with its intended purpose, including for error correction'.
[180] C. H. Nadan, 3-6, 2009.
[181] United States v. Univis Lens at 242, also Section 105-110 in Cyrix Corp. v. Intel Corp., 846 F. Supp. 522, 1994 and Adams v. Burke at 453.
[182] R. M. Hilty, p. 1-6, 2015.

### 14.3.1 Key takeaways and reflections

It could be argued in the case with the CCNx software that the right to 'use' in the license can be interpreted to also include a patent license to the patents necessary for the use of the software. It could also be argued based on the Article 5.2 in the Directive on The Legal Protection of Computer Programs that there is an implied patent license, but it has not yet been affirmed that the article also includes the grant of patents. Another possibility is that one could interpret the CCNx license to have an implied license by legal estoppel, which suggests that a patentee cannot license or assign a right, which it has received consideration for, and then derogate from that grant to assert its patents against the other party.[183] Either way, it seems likely that a court under EU law would determine that there would be an implied patent grant in the CCNx license.

Though, the implications of the implied license in Open Source are well debated and somewhat outside of the scope of this paper, it still has an effect on the possible exhaustion of the distribution rights of the CCNx software. If the distribution rights of a CCNx software copy would be exhausted, including the patented functionality, then an implied license would not be needed.[184] If only the copyrighted code is exhausted, then likely the argument of an implied license to the patents could be made. Though, the scope of such license and its effect on EU's interpretation of the exhaustion doctrine would be a new separate study.[185]

## 14.4 Summary of the current exhaustion doctrine under American law

Before moving on to the next phase of the study, where scholars will share their view on innovation policy and how to best balance the exhaustion doctrine with licensing, a short summary of the exhaustion doctrine under American law will follow. This will also be further elaborated on in the conclusions, albeit from a EU law perspective.

Until the Quanta Computer v. LG Electronics the American case law followed two themes: being more tolerant towards vertical restrictions and believing that IPRs are not per se

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[183] C. H. Nadan, p. 3-6, 2009.
[184] I.a. compare to Opinion of the Court, p. 18, Quanta Computer v. LG Electronics.
[185] See i.a. J. Ahlberg, 'The implicit patent license grant in some popular Open Source licenses - A study of the implied patent license grant in GNU General Public License version 2, The BSD license, the MIT license and the dualistic nature of Open Source in an industry setting', 2014.

monopolistic.[186] By giving the exhaustion doctrine precedence instead of contractual restrictions in the Quanta Computer v. LG Electronics it seemed to reverse to an older form of patent 'exceptionalism' that perceived contractual restraints on patented articles rather suspiciously.[187] It did so with the support of the Solicitor General and the Department of Justice's Antitrust Division. In its amicus brief it argued, *"Restrictions on downstream use or resale may arise as a matter of state contract law, but not patent law"*[188]. The applied rational from the Department of Justice's Antitrust Division regarding the Quanta Computer v. LG Electronics seems to have its basis that there is something wrong about using licensing conditions together with the threat of infringement suits rather than just simple breach of contract actions to control the market.[189]

Just a few years later, American law seemed to change its course again with the decision in the mentioned Vernor v. Autodesk, which indicated a more tolerant view on contractual restrictions. A similar tolerant view was also applied in the later Capitol Records v. ReDigi from 2013, where a purchased music file on a CD could not be transferred to an intangible form and be re-sold without the consent of the right holder, since that would violate the original license agreement.[190]

Despite over hundred years of adjudication, American law is still trying to find consistency in applying the exhaustion doctrine.[191] The most recent patent case in Quanta Computer v. LG Electronics suggests that at least the Supreme Court is steering towards strengthening the exhaustion rule's applicability, but the most recent cases regarding software and copyright in lower courts suggest otherwise. A difference between these later decisions and the Quanta Computer v. LG Electronics is that it involved copyright instead of patents. Based on observations, it seems that American courts are more tolerant on copyright restrictions than patent restrictions, perhaps is this because copyright is a more artistic right that has more philosophical value than patent rights, which are in general more commercially driven. In

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[186] I.a. Mallinckrodt v. Medipart, General Talking Pictures v. Western Elec., Wall Data, Inc. v. Los Angeles County Sheriff's Dep't, 447 F.3d 769, 2006.
[187] Compare to the rationale of United States v. Univis Lens, at 250.
[188] Amicus Curiae Supporting Petitioners, Quanta Computer v. LG Electronics, 2008, 2007 WL 3353102.
[189] H. Hovenkamp, 'Post-Sale Restraints', p. 151-152, 2011.
[190] Syllabus, Capitol Records v. ReDigi Inc.
[191] H. H. Lidgard, p. 28, 2002.

software, it seems though that the exhaustion doctrine is dependent on whether the licensee or purchaser can claim ownership over the IPR protected copy or not.[192]

# 15. Scholars view on innovation policy

## 15.1 Introduction

Previous sections have mostly been dominated by case law reviews concerning the exhaustion doctrine. Naturally, these sections have had its analysis derived from legal argumentations of regulations and case law. This section will however shed light how the adaptation of the exhaustion doctrine is best motivated from an innovation perspective and will include different opinions on the matter by scholars. The objective is to highlight what interests that should be prioritized to best serve the innovativeness and the new structures of the knowledge economy, and to further align it with the original intent of the exhaustion doctrine and its development over time.

## 15.2 Timely notice of restrictions

Professor Herbert Hovenkamp points out that the worst problem with the exhaustion doctrine is the lack of subtlety. Once an authorized sale is confirmed, post-sale restraints are denied automatically with no reflections on the restraints purposes or effect, leaving no room for considerations such as market power, competitive effects and implications for innovations. This naturally invites the question what useful purposes the exhaustion doctrine really serves. It is well known that the exhaustion doctrine shall protect downstream users and prevent IPR holdups, but what if there could be post-sale restraints fulfilling the same purpose of protecting downstream users and prevent IPR holdup? Hovenkamp suggest that notice seems to be key when trying to restrain property in general,[193] but for IPRs there are no such effective system in place. This, despite that those courts that have allowed post-sale restraints have either required that the aligned infringer have received timely notice on the restriction or otherwise it shall have been clear that notice was in fact given. Providing sufficient notification can be tricky with IPRs that are incorporated in mediums that change owners frequently, but Hovenkamp suggest that one solution to this is to place the burden of proof on that effective and timely

[192] R. M. Hilty, p. 2, 2015, also Section 7(11), Vernor v. Autodesk.
[193] Compare for example to the land register on real estate.

notice has been given to downstream users on the patentee. Only then can a case for infringement be made.[194]

### 15.2.1 A sticky default rule

Associate professor of law, Innovation Chair in Electronic Commerce, Arial Katz offers another view on the discussion although he acknowledges the necessity of vertical restraints in some cases to cover past investments and re-investments. He argues that aftermarket contractual restrictions shall be treated restrictive and that the exhaustion doctrine shall remain a sticky default property rule. Katz suggests that arguments for a more tolerant view on restrictions tend to be from the contracting parties' perspective and focus on the short-term benefits rather than calculating cost and benefits of those external to them. Even if there could be economic justified reasons for IP owners to impose post-sale restrictions, the nature, scope, and duration of those contracting terms would be socially less optimal when considering externalities and other market imperfections.[195] Thus, Katz propose that courts should refuse to enforce license conditions or terms limiting the ability of the licensee to resell goods containing IPRs unless the IPR owner can show that the post-sale restraint is *"necessary and superior to other means to achieve efficiency".*[196]

### 15.2.2 Key takeaways and reflections

Now Hovenkamp is trying to argue that if a patentee would leave sufficient notifications to downstream users' restraints could thus be justified since it would protect downstream users from unwanted IPR surprises.[197] Although it would serve a purpose in some way of protecting downstream users it would still create IPR holdups and hence preventing a dynamic market place and the fostering of new inventions. This would be especially true for Open Source as the Open Source working model is built so that downstream users can continue to develop new technology from the original code.

Thus, I would perhaps agree more with Katz and the category of scholars who are arguing for the exhaustion doctrine to be seen more as a sticky default rule in regards to intangible

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[194] H. Hovenkamp, 'Post-Sale Restraints', p. 151-156, 2011.
[195] A. Katz, 'The First Sale Doctrine and the Economics of Post-Sale Restraints' in Brigham Young University Law Review 55, p. 59-61, 2014.
[196] Ibid, p. 141, 2014.
[197] See Section 13.2.

mediums.[198] Law professors Aaron K. Perzanowski and Jason Schultz points out that *"If we wish to preserve the benefits of access, preservation, privacy, transactional clarity, user innovation, and platform competition, we must find a way to reinvigorate exhaustion in the face of digital distribution and technological protection measures".*[199] In fact, recent research on user innovation shows that innovation often occurs outside the 'producer-firm', suggesting that ideas and creations emerge in the so-called 'innovation Wetlands'.[200] Open Source software can be connected to this idea as it often is a result of user innovation created by lead users, separated from the general consumer mass. Lead users use their intellectual capital to anticipate and create features before the demand exists, and thus driving innovation further. As Katz points out at the time of an invention, few can predict what value it will bring and even fewer will be able to capture the full benefits with the discovery. If exhaustion doctrine would be seen more as optional merely than a rule, then lead users would not been able to conduct experiments on the IPR protected mediums. Also, innovation has spillover effects, which encourage additional innovation and thus it would be wise to restrict post-sale restraints rather than allowing them.[201]

When comparing this rationale to Open Source, many separate innovations indeed derives from an original Open Source licensed software developed by independent users due to licensing agreements granting rights similar rights as if you would own the software. CCNx licensing agreement do grant rights to exploit the software code but with the limitation of utilizing it freely if it contains features covered by PARC's patents. Thus, I assume PARC is agreeing that user innovation is something positive and in fact the purpose of the CCNx project. In this regard PARC is not likely contradicting the idea of user innovations, just the idea of applying the exhaustion doctrine on the distribution rights of the software and hence losing its chance to capitalize on it. Perhaps is Open Source licensing with some restriction justifiable enough to drive development forward and create user innovations, hence filling the same purpose as a sticky default exhaustion rule. In fact, it could even be more efficient as the exhaustion doctrine

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[198] See Section 13.3.
[199] A. K. Perzanowski and J. Schultz, 'Digital Exhaustion' in Wayne State University Law School Legal Studies Research Paper Series No. 10, p. 68-69, 2010.
[200] A term coined by Andrew Torrance and Eric Von Hippel in The Right to Innovate: 'Our Innovation Wetlands' in 2013.
[201] A. Katz, p. 114-117, 2014.

does not allow one to copy code for further articles, making perhaps licensing more favourable.[202]

During the path of the exhaustion doctrine, most of the US Supreme Court's decisions have attached its exhaustion rationale to competition policy rather than innovation policy and similar with the CJEU with its attached rationale on the functioning of the internal market.[203] The rationale of applying the exhaustion doctrine on the distribution rights of Open Source software seems not only stretch to competition policy but also to innovation policy as downstream users can evaluate and create new inventions that perhaps not the original licensor could anticipate. Although this is an often-used argument against IPRs it is especially true for the way Open Source works. After all, if one would not like to use the Open Source model, one could just choose to not license it through an Open Source license. Perhaps will innovation policy receive more attention as a determine factor of the applicability of the exhaustion doctrine in the future, especially in cases involving Open Source. What interestingly was pointed out by Hovenkamp is that the exhaustion doctrine has the underlying goal to further innovation, albeit facilitation of innovations has never been articulated as a goal of the exhaustion doctrine under American law.[204]

## 15.3 Flexibility – a way of middle ground?

Dr. Anne Layne-Farrar offers a third view and believes that contractual flexibility in certain situations can be economically justified, especially if they are intermediate production goods that can be licensed to more than one party in a vertical production process. She argues that it makes economic sense and does not result in any anticompetitive harm.[205] Though, she acknowledge that the doctrine shall be seen as a default rule but as long as parties involved can be presumed to understand the contractual obligations it should be allowed to contract around the exhaustion rule.[206] She further argues, to maximize IPRs economic efficiency and capturing the society's best interest it is important to design IPR rules that give actors incentives to innovate and the ability to sell or license their creation for broad implementation or use.[207]

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[202] See i.a. Section 70 and 78, UsedSoft v. Oracle.
[203] See 13.3.1.
[204] H. Hovenkamp, 'Post-Sale Restraints', p. 125, 2011.
[205] A. Layne-Farrar, 'An Economic Defense of Flexibility in IPR Licensing: Contracting Around "First Sale" in Multilevel Production Settings', p. 39-41, 2010.
[206] Ibid, p. 1, 2010.
[207] Ibid, p. 8-9, 2010.

She points out that some of these multilevel goods that can benefit from this rational are software modules, which can be embodied and applied in multiple products vertically. In transactions, where the buyer and seller are b2b it makes sense for the right holder to limit resale to prevent arbitrage from low value/low licensing fee market toward higher value/higher licensing fee market. Layne-Farrar reasons that charging a single actor versus multiple along the production chain is not the pivotal element for social welfare and thus not allowing the exhaustion rule to be flexible at times could create economic inefficiencies since licensing works differently depending on firms, industries and sectors.[208]

### 15.3.1 Key takeaways and reflections

This view makes perhaps most sense from an Open Source licensing point of view since Open Source can target different levels in a vertical production – many actors in different levels in the ICT-industry can for example have use for the CCNx software and the fact that all patents can be licensed on FRAND terms preserve technology access and transactional clarity.[209] This would probably benefit all interests involved - the right holders, the licensors and the society and would be more efficient as a license arguably include more rights than a sale.[210] This rationale would also make sense considering the effects of both competition and innovation policies. Thus, I agree with Layne-Farrar that the exhaustion doctrine should be a default rule, but be flexible at times, especially if they are economically justified.[211]

Though, scholars may have different views on the applicability of the exhaustion doctrine, there is a consensus by scholars that there is an inconsistency in the appliance of the doctrine in case law, at least under American law.[212,213] Thus, I agree with scholars that there should be a more coherent exhaustion doctrine in regards to contractual restrictions.[214] Perhaps a start would be if the exhaustion doctrine could identify a set of goals that it is trying to serve with post-sale

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[208] Ibid, p. 32-33, 2010.
[209] Although contractual parties need to agree on the specific terms of a FRAND licensing agreement.
[210] I.e. a license grants the right to copy, modify and distribute, see further in conclusions.
[211] A. Layne-Farrar, p. 39-41, 2010.
[212] Though, concerns on the distinctions on copyrighted Articles by the CJEU have been raised as well, see i.a. E. Rosati, 'Digital exhaustion: a debate and a (policy) scandal', http://ipkitten.blogspot.se/2015/03/digital-exhaustion-debate-and-policy.html, accessed 2016-12-01.
[213] See Section 12.6.
[214] See Section 12.6.2.

restrictions to create some transparency. However, EU law seems to be a bit more coherent with the exhaustion doctrine and seems to be more restrictive with allowing contractual restrictions on IPR protected copies as it would harm the functioning of the internal market.[215]

# 16. Conclusions

## 16.1 Introduction

During the path of the exhaustion doctrine there have been many cases and expressed opinions. To derive the right insights of the path of the exhaustion doctrine, which corresponds the most to the original intent of the exhaustion doctrine, I have chosen to give the recent precedencies from CJEU and US Supreme Court a higher judicial value for my analysis than mentioned decisions made in lower courts. This will hopefully exclude the doctrine's adverse externalities over the years and create a more constitutional based best prediction. Additionally, since my conclusions will be based on Swedish law, precedencies and regulations under EU law will for obvious reasons have precedence over contradicting American law. Thus, will UsedSoft v. Oracle, Quanta Computers v. LG Electronics and to some extent Bowman v. Monsanto be those most central for my derived insights. I do also believe on a personal note that these cases are coherent with the intent and purpose of the exhaustion doctrine.[216]

## 16.2 Copyright exhaustion of the distribution rights of Open Source licensed software

UsedSoft v. Oracle is without doubt the most important case in the EU concerning software licenses. Contrary to the Vernor v. Autodesk it deemed the software license unenforceable as the distribution rights of the software copy was exhausted when downloaded from the licensor's website.[217] The CJEU mainly emphasized on two factors when deciding that it was a sale; 1) the license was perpetual and did not include any significant use restrictions 2) the original reimbursement to Oracle for the license corresponded to the value of the license, i.e. the reward was in line with the innovation.[218]

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[215] See Section 12.2.2.
[216] Compare to the earlier cases of the exhaustion doctrine, i.e. Adam v. Burke, Keeler v. Standard Folding Bed and United States v. Univis Lens, and the 'Erschöpfungsteori'.
[217] See Section 12.4.1.
[218] See Section 12.4.2.

When comparing the Oracle license in the case with the CCNx license, it is in fact more restrictive than the CCNx license. The CCNx license is also perpetual but additionally grants the rights to copy, modify and redistribute the source code, which was never granted in the Oracle license. Those grants are all rather standard in other Open Source licenses as well.

The reimbursement that Oracle got for its license was a one-time up-front payment, which corresponded to the value of the copy.[219] Now the CCNx software is free to download, which means that PARC is not receiving any monetary reward for its creation. Nothing in UsedSoft v. Oracle points out that the reimbursement could be non-monetary as well as it was deemed that the remuneration to Oracle corresponded to the economic value of the license.[220] Thus, it could be argued that there is a mismatch between innovation and reward, and hence it cannot be deemed as a sale. However, American law have tried Open Source licenses in the past and confirmed that the reward does not have to be monetary per-se, as there indeed could be other benefits with Open Source.[221]

Since the UsedSoft case involved proprietary software it remains unclear if the precedence is applicable on Open Source software as well,[222] though my conclusion is that it is rather plausible considering the similarities between the licenses and the EU's objective with the functioning of the internal market through the free movement of goods in mind.[223]

However, Open Source is a rather special phenomenon, which in this case serves other interests and benefits than the Oracle license. The purpose with Open Source is to make it possible for downstream users to further develop the software, not creating an end-product such as the licensed Oracle software. When the exhaustion doctrine was first introduced it served to protect ownership of end-products and not unfinished products. In order to develop the CCNx software to an end-product through Open Source, one need the grant by a right holder to modify and

[219] See Section 12.4.2.
[220] Ibid. 12.4.2.
[221] See Section 12.4.3.
[222] See also K. Moon, 'EU highest court says software licence terms can be ignored', http://www.lexology.com/library/detail.aspx?g=d1ff4369-afcc-4879-97fa-7a8afd8b3380, accessed 2016-10-20.
[223] See i.a. Deutsche Grammophon v. Metro-SB-Großmärkte.

perhaps copy the code for reproduction of the software. Two rights that are outside the scope of the exhaustion doctrine as a 'sale' only concerns the sale of that particular copy as it is.[224]

When a licensed software is deemed to be a sale then the terms in the license, which includes modifying and copying, are disregarded as the license is deemed unenforceable. Thus, modifying or copying software for reproduction acquired in a sale transaction is a breach of copyright without a license. In other words, a license is in the case of Open Source software more effective as it gives the user more rights than a sale.[225]

An exhaustion of the distribution rights of an Open source licensed software copy would according to me contradict the doctrine's original intent and purpose as it would not protect the end-product, but block access to technology, user innovations and technology advancements.[226] I believe a teleological judicial interpretation of the exhaustion doctrine which would include exhaustion of Open Source licensed software would therefore be considered an externality not in line with the original intent of the doctrine. Therefore, I share Dr. Anne Layne-Farrar view on the exhaustion doctrine that it should be a default rule but flexible in cases where a license can be economically justified and without resulting in anticompetitive harm, hence giving room for vertical licensing constellations open for many users.[227]

### 16.3 Patent exhaustion of distribution rights of Open Source licensed software

Since it is plausible that the exhaustion doctrine would be applicable, the question remains if PARC's patented functionality of the software could also include in the exhausted distribution rights. Not much on the matter has been previously stated and in fact no case law has been found concerning patent exhaustion of distribution rights to software copies. This has required me to analyze if previous precedencies regarding exhaustion can be applied analogy and/or if the teleological judicial interpretation allows similar conclusions to be made.

The CJEU never assessed the possible exhaustion of Oracle's software patents in regards to the license in the UsedSoft v. Oracle. Hence, one can only speculate if the deemed sale would

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[224] See Opinion of the Court, p. 11 Bowman v. Monsanto, Article 4.2, Directive 2009/24/EC, Section 87, UsedSoft v. Oracle.
[225] K. Moon, 'Where does free and open source licensing stand in Europe?', http://www.ajpark.com/ip-central/news-Articles/2013/08/where-does-free-and-open-source-licensing-stand-in-europe/, accessed 2016-10-21.
[226] See Section 13.3.1.
[227] See Section.11.2.

exhaust the patent rights as well. According to Dr. Dietrich Kamlah, there is a possibility for the CJEU to also apply the UsedSoft v. Oracle analogy on patents based on general principle of patent exhaustion within the common market under Article 34 TFEU to secure the free movement of goods and services.[228] Although, the analogy could be argued to be within a theological interpretation of the exhaustion doctrine, it has no evident support in previous case law or doctrine, hence an exhaustion argumentation based on the Quanta Computer v. LG Electronics would perhaps be more adequate.

In Quanta Computer v. LG Electronics it was stated that an article that embodies essential features of a patent, which is practiced once part of a later standardized process is exhausted by the time of the sale if the intended and reasonable use was to in fact incorporate them in such process. The key is whether it can be determined that the released software copy contains essential features of the software patents. I believe it would be hard to argue for a patent exhaustion of the distribution rights as well, as patents describes the functionality that the source code creates, which is a stand-alone feature not expressed in the released source code copy.[229] The claims of software patents are differently written than software code language and therefore if software code do not include claimed patented inventions in its language, then it cannot be concluded as containing essential features of the patent, at least not based on Quanta Computer v. LG Electronics.[230]

However, I agree that the intended and reasonable use of the CCNx licensed software in this case is to practice the patents, which could perhaps suggest that a patent exhaustion of the distribution rights of the copy occurs when downloaded and consequently unmodified as it is CCNx code gets applied in a computer to create the software.[231] Though, this is a rationale argument it is not something that is clearly supported by law, hence I believe an exhaustion is not possible with the current legislation. Additionally, such exhaustion would arguably anyway be rather useless in the CCNx project as the purpose for downstream users is to develop the

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[228] D. Kamlah et. al., 'Exhaustion of "software" patents', https://www.taylorwessing.com/download/Article_software_patents.html, accessed 2016-10-21.
[229] See Section 8.2.
[230] See Section 12.3.1. "Essential features".
[231] See Section 12.3.1.3.

code further and not apply it as it is. To do this a patent grant, implicitly or explicitly, is required.

So, does this mean that one can license software and then sue for patent infringement? Not exactly. The exhaustion doctrine was just one possible legal outcome of such licensing constellation. Instead, it is according to me rather plausible that a licensor would instead be granted an implicit patent license to use the patents, including a licnesee of the CCNx software.[232] Though, the legitimacy and scope of such grant is left for someone else to discuss further.

## 16.4 The validity of contractual restrictions on patents in Open Source software

As was pointed out in the previous section a patent exhaustion of distribution rights of an Open Source software copy is unlikely, hence making a wording on the exclusion of patents in an Open Source license rather redundant. In the case with the CCNx license the statement of offering patents through a separate FRAND license can be more seen as an additional offering rather than a smart move to exclude it from the exhaustion doctrine. If my observations were wrong and it would be deemed as a patent exhaustion of the distribution rights of the copy as well, a simple wording of offering the patents through a separate license would likely not be enough to circumvent the exhaustion doctrine. Once exhausted, the terms in the license are not enforceable, hence making such wording likely inadequate.[233] This means that once exhausted, the FRAND wording has no more legal value to serve. Instead, if PARC would design the license as a clearly defined field-of-use, restricting a licensee to freely use the software, then it would likely be deemed as a beneficial right and thus circumventing the exhaustion rule.[234] The wording in the CCNx license could however implicate the implied patent grant, but that is something that is outside the scope of this study and hence will not be further deliberated on.

[232] See Section 12.5.3.
[233] See Section..12.3.2.1.
[234] See Section..12.5.2.

# 17. Implications

## 17.1 The three arenas

The implications of my conclusion for the ICT-industry will be divided into three categories. From these implications one can draw insights on how to form an IP strategy best responded to my findings.

### 17.1.1 Judicial Arena

As was pointed out in the conclusions an exhaustion is perhaps not the best option for either the licensor nor the licensee as an enforceable license grants more rights for development. Despite the fact, the logic of the UsedSoft v. Oracle can probably be applied on an Open Source licensed software as well, it is unlikely that parties would want to go to court on the basis of exhaustion. As long as the exhaustion doctrine does not include the right to at least copy the software for implementation in multiple copies, I doubt that a licensee would argue for exhaustion in a judicial procedure as there would be no benefits with such exhaustion other than one would not need to attach the same license to downstream users.[235] A case where a licensee is arguing for an implied patent grant instead of licensing them under FRAND seems thus more likely in the light of the CCNx project.

It is likely though that the exhaustion argument, both with patents and copyright, would still be used as leverage in a licensing negotiation to bear down the royalties by arguing why one would want to pay licensing fees when there is already access to the technology via the Open Source software, which copies the right holder do not have the right to restrict anymore.

### 17.1.2 Business Arena

The fact that one cannot copy software for implementation in multiple copies, means that an actor need to download the software every time it wants to include it in a product. For a company with many products this means that it needs to re-do the process for every product, although there could perhaps be be automated in a script or similar. Still, one cannot modify and redistribute copyrighted medium as it wishes without the explicit consent of the right holder. Thus, much points that it will be business as usual, as no parties have any interest of the distribution rights of the licensed software copy to be exhausted. The trend with licensing

[235] See Section 10.2, terms for the CCNx license, ”…must retain the above copyright notice”.

constellations, where the Open Source model is combined with patent licensing will thus likely continue in the ICT-industry. It is indeed a smart way to combine different interests as a right holder can create de facto standards, license patents on FRAND leading to monetization and comply with competition rules for right holders[236] and technology access for users. Though, it is questionable that behavior would satisfy the general mass of the Open Source community.

It should be noted that a possible implicit patent grant in the Open Source license could make the FRAND licenseing commitments insufficient, depending on interpretation.

### 17.1.3 Administrative Arena

As long as software patents will be held valid by courts in infringement suits, actors are going to apply for them and they are wise to do. Software patents are undoubtedly more valuable than copyright for actors in the ICT-industry.[237] Moving into a more software connected world, patents on functionality will only receive an increased importance. As was concluded in the study, a patent holder's distribution rights are not exhausted once releasing software copy through an Open Source license,[238] hence making them even more important as strategic assets for creating new licensing revenue constellations.

[236] Through FRAND commitment actors are avoiding themselves from conducting anti-competitive effects, Discussion papers by the Competition policy brief, http://ec.europa.eu/competition/publications/cpb/2014/008_en.pdf, accessed 2016-12-23.
[237] See Section 9.
[238] At least those, which are similar to the CCNx license.

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