



FACULTY OF LAW  
Lund University

Fredrik Grip

# Royalty Free Standardization -The Pro-Competitive Solution in Public Procurement of ICT?

JURM02 Graduate Thesis

Graduate Thesis, Master of Laws programme  
30 higher education credits

Supervisor: Henrik Norinder

Semester: Autumn Semester 2014

# Contents

<b>SUMMARY</b>	<b>1</b>
<b>SAMMANFATTNING</b>	<b>2</b>
<b>PREFACE</b>	<b>3</b>
<b>ABBREVIATIONS</b>	<b>4</b>
<b>1 INTRODUCTION</b>	<b>5</b>
1.1 Purpose	5
1.2 Method and Material	5
1.3 Outline	6
<b>2 BACKGROUND</b>	<b>8</b>
2.1 Vendor Lock-in	8
2.2 Interoperability Standards	9
2.3 Standards and Competition Law	10
2.4 IP Licensing in ICT Standards	11
2.5 FRAND vs RF	13
2.6 Article 101(3) TFEU	13
<b>3 X/OPEN</b>	<b>15</b>
<b>4 THE FOUR CONDITIONS</b>	<b>17</b>
4.1 First Condition	17
4.1.1 Efficiencies	17
4.1.2 Innovation new Products	18
4.1.3 Interoperability	22
4.1.4 Other Efficiencies	25
4.2 Second Condition	26
4.2.1 “Fair Share for Consumer”	26
4.2.2 Technological Benefit for Consumer	28

4.2.3 Economic Benefit for Consumer	31
4.2.4 Benefits vs Deficits	33
4.3 Third Condition	36
4.3.1 Indispensability	36
4.3.2 GPL License Issue	36
4.3.3 Efficiency of the Standard	40
4.4 Fourth Condition	42
4.4.1 Elimination of Competition	42
4.4.2 Negative Effects of RF Requirement	43
4.4.3 Abuse of Dominant Position	46
4.4.4 Other Effects of FRAND and RF on Rival Competition	51
<b>5 CONCLUSION AND ANALYSIS</b>	<b>54</b>
5.1 Conclusions	54
5.1.1 First Condition	54
5.1.2 Second Condition	56
5.1.3 Third Condition	57
5.1.4 Fourth Condition	58
5.2 Analysis	60
<b>BIBLIOGRAPHY</b>	<b>64</b>
<b>TABLE OF CASES</b>	<b>69</b>

# Summary

The Commission's decision to utilize FRAND as the Union's premiere IPR licensing form in ICT standardization has sparked a debate among policy makers and stakeholders in the software industry regarding which licensing form is best suited for interoperability software standards in public procurement. Several voices from within the ICT industry as well as public authorities have openly supported the use of a royalty-free (RF) requirement for interoperability standards as being the more adapt option for the task at hand, to create interoperability and promote innovation and competition. This raises the question; which licensing approach would be better from a Competition Law perspective?

The intention of this thesis and its research is to find the answer to that question through investigating whether or not a restriction in the form of a RF requirement in Article 13 of Regulation 1025/2012 would fulfill the four cumulative conditions in Article 101(3) TFEU and thus be considered pro-competitive. The four conditions are that the restriction produces "efficiencies", that the consumer receives their "fair share" of those efficiencies, that there is an "indispensability of the restriction" and that the restriction does not allow "elimination of competition".

For these conditions to be fulfilled in the relative context several factors need to be considered, such as technological and economical aspects of using RF or FRAND technologies, the status of the different relevant software markets and the situation regarding ICT procurement in different Stated within the Union. The investigation is focused on how these technical and economic aspects meet with the legal demands in EU law.

This thesis makes the argument that based on the unique qualities of the interoperability software industry in combination with the current situation in public ICT procurement and the objectives of European standardization, such a RF requirement that is discussed in this thesis would be considered as pro-competitive and consequently the more adapt solution for interoperability standardization.

# Sammanfattning

Europeiska kommissionens beslut att använda sig av FRAND som den primära immaterialrättsliga licensformen för teknologi inom IT standardisering har legat till grund för en debatt mellan beslutsfattare och intressenter inom mjukvaruindustrin angående vilken licensform som bäst uppfyller målsättningarna med standardisering av interoperabilitet mjukvaror för offentlig upphandling. Flera inom IT industrin så väl som offentliga myndigheter har öppet stöttat royalty free (RF) tvång för interoperabilitet standarder som den mer optimala lösningen för dem föreliggande målsättningarna; att skapa interoperabilitet samt främja innovation och konkurrens. Detta leder till frågan, vilken av dessa två licensformer är mest fördelaktig från ett konkurrensrättsligt perspektiv?

Denna uppsats intention samt målsättningen med dess undersökning är att finna svaret på den frågan genom att utreda ifall en restriktion i form av ett RF tvång i artikel 13 i Regulation 1025/2012 skulle uppfylla dem fyra kumulativa kraven i artikel 101(3) TFEU och då anses som positivt utifrån ett konkurrensrättsligt perspektiv. Dessa fyra krav är att restriktionen producerar ”effektivitetsvinster”, att konsumenterna får en ”skälig del” av dessa effektivitetsvinster, att restriktionen är ”nödvändig” för realisationen av effektivitetsvinsterna samt att restriktionen inte ger möjlighet till att ”eliminera konkurrens”.

För att dessa krav ska vara uppfyllda i det relevanta sammanhanget så måste flera faktorer beaktas, så som tekniska och ekonomiska aspekter av användandet av RF eller FRAND teknologier, statusen på dem relevanta marknaderna och situation gällande offentlig IT upphandling hos EUs medlemsstater. Undersökning fokuserar på hur dessa tekniska och ekonomiska aspekter korrelerar med dem juridiska kraven inom EU rätten.

Denna uppsats argumenterar för att baserat på interoperabilitet mjukvaruindustrins unika karaktär i kombination med den föreliggande situationen inom offentlig upphandling av IT och målsättningen med EU standardiseringen så skulle ett sådant RF krav som undersökts i denna uppsats ses som konkurrensrättsligt fördelaktigt och följaktligen den mest gynnsamma lösningen för interoperabilitet standarder.

# Preface

This thesis is an original, unpublished work by the author Fredrik Grip. I hope that you the reader find this work an educational, interesting and enjoyable read.

# Abbreviations

BSA	Business Software Alliance
ECIS	European Committee for Interoperable Systems
EIF	European Interoperability Framework
EU	European Union
FRAND	Fair Reasonable and Non-Discriminatory
GPL	General Public License
GSM	Global System Mobil
ICT	Information and Communication Technology
IDABC	Interoperable Delivery of European eGovernment Services to public Administrations, Businesses and Citizens
IETF	Internet Engineering Task Force
IPR	Intellectual Property Rights
IT	Information and Technology
OS	Operating System
R & D	Research and Development
RF	Royalty Free
SME	Small and Medium-sized Enterprises
SSO	Standard Setting Organization
TFEU	Treaty on the Functioning of the European Union
UK	United Kingdom
W3C	World Wide Web Consortium

# 1 Introduction

## 1.1 Purpose

The purpose of this thesis is to examine from a Competition Law perspective if the utilization of a RF policy for European interoperability standards would be better than the FRAND policy that is currently in use. This will be done through an examination of whether or not a restriction in the form of a RF requirement for the interoperability (ICT) standards that are set in accordance with Article 13 of Regulation (EU) No 1025/2012 would be considered pro-competitive according to European Competition Law by meeting the conditions that;

- *The restriction leads to efficiency gains*
- *Consumers receives a fair share of the resulting benefits, that is to say, the efficiency gains*
- *The restrictions is indispensable to the attainment of those objectives, that is to say, the efficiency gains*
- *The agreement does not afford the parties the possibility of eliminating competition in respect of a substantial part of the products in question*

This thesis will based on the investigation produce a conclusion regarding the potential fulfilment of these four cumulative conditions as well as an analysis of the current legal situation regarding IPR licensing forms in European ICT standardization.

## 1.2 Method and Material

The subject of this thesis is approached by using a legal dogmatic method. In this aspect, the examination has mainly touched on the applicable Competition laws regulating standardization within the European Union. I have for this purpose investigated the Treaties of the Union as well as several Communications, Guidelines and Frameworks in order to better understand the full scope and aspirations of European ICT standardization and its relationship with European Competition Law.

Legislation, initiatives, policies and communications of Member States have also been researched to the extent they hold importance for the effectiveness of Union policy and for the relevant discussion in general.



To gain a more profound understanding of how to correctly interpret the Conditions in Article 101(3) TFEU and how the bodies of the Union have dealt with similar situations to better examine the status of the investigated situation in this thesis I have used several cases and decisions to my aid.

Doctrine and articles have been used to further develop the theoretical understanding of the subject regarding the legal as well as the technological and economical aspects the subject. To this, I might add that due to the novelty of the subject, both in regards to the provision discussed and the debate regarding RF vs FRAND, there are not much classical legal doctrine on this subject. Especially since the debate, regarding different licensing forms for interoperability standards in public procurement is a legal question arising in recent years, and the particular discussion in this thesis is a rather narrow one.

Since the scope of this thesis is to investigate whether technological and economical qualities meet with legal demands I have gone to fields outside of the legal realm to find necessary information. To this end, I have used researches, studies, interviews, statements and opinions of and by authorities, experts, policy makers and other important figures regarding the actual and possible effects of using different licensing forms. This has been crucial in properly assessing how the use of these license approaches would meet with the legal demands in European Competition Law.

### **1.3 Outline**

After this introduction, the second chapter will start the thesis of by recounting the background to the discussion at hand. This background will first outline the problems that public procurers of ICT faces, and that creating interoperability standards is the most adapt tool to resolve those problems. Then a description of the general relationship between standards and competition law will follow, which will lead to the relevant question regarding the licensing forms RF and FRAND. The scheme that the investigation of the thesis be based on will then be described, so to give the reader a full understanding of the context relevant for the following investigation.

After the background, a review of the X/Open case will follow. A case that bare resemblance to the situation examined in this thesis on several levels, in type of restriction as well as efficiencies produced. This is to give an idea of how the Commission values and distinguishes the restrictions and efficiencies related to the questioning at hand.

The fourth chapter that follows is the investigation itself and thus the central part of this thesis. Every condition will there be discussed individually and in chronological order. First, through a description regarding what the condition constitutes according the relevant EU provisions and case law

followed by the investigation as to the effects that the use of RF technology and standardisation have in both theory and practice in regards to the condition.

The last chapter will be where based on the information found in the previous chapters the conclusion regarding whether or not a RF restriction in Article 13 would fulfil the four conditions and thus considered pro-competitive will be made. There will also be an analysis of the general situation regarding the IPR licensing in European interoperability standards.

# 2 Background

## 2.1 Vendor Lock-in

The technological progress in the “Information and Communication Technology” (ICT) sector have been of great benefit to citizens, companies and public authorities and have become an integrated part in everyday life. The rapid development and the constant innovation that is the nature of the ICT industry is however in some cases the source of problems for public procurers, especially by creating situations of vendor lock-in.

Vendor lock-in is a situation in which a customer using a product or service cannot easily transition to a competitor’s product or service. This is usually the result of proprietary technologies that are incompatible with the technologies of competitors. Lock-in also goes hand in hand with dominant position, which is a common situation in the software industry. Not always because the dominant software is more cost effective or better performing than the competitors but because of the need for network effects<sup>1</sup> in the ICT market.<sup>2</sup> What happens in these situations is that public authorities enter into contracts with providers of ICT in order to use an ICT product or service for a certain period of time. Lock-in then happens when the public authority cannot easily change provider after the expiration of this period of time, because not all essential information about the system is available for efficient takeover by another provider. To change provider is in these cases is very costly and it is often cheaper to stay with the same provider even if the services are more expensive and of inferior quality.<sup>3</sup>

The negative impact of lock-in also affects the competition in the ICT market and can create barriers to entry and lead to dominant positions. This lack of competition often leads to higher prices and around 1.1 billion euro is unnecessarily lost per year in the public sector alone.<sup>4</sup>

Surveys have shown that a large number of procurement officials in the European Union consider changing their existing ICT solution as too costly since it would involve changing many other systems that uses the data of the system that they would like to change. Of those surveyed, a significant

---

<sup>1</sup> For information on network effects see inter alia [https://www.princeton.edu/~achaney/tmve/wiki100k/docs/Network\\_effect.html](https://www.princeton.edu/~achaney/tmve/wiki100k/docs/Network_effect.html) and/or [http://en.wikipedia.org/wiki/Network\\_effect](http://en.wikipedia.org/wiki/Network_effect)

<sup>2</sup> [http://www.linio.org/vendor\\_lockin.html](http://www.linio.org/vendor_lockin.html)

<sup>3</sup> COMMUNICATION FROM THE COMMISSION “Against lock-in: building open ICT systems by making better use of standards in public Procurement” page 2

<sup>4</sup> COMMUNICATION “Against lock-in” page 2

number also felt they would not be able to change their ICT solutions for fear that their information would not be transferable and thus lost.<sup>5</sup>

The most efficient way to prevent vendor lock-in and similar problems is by creating software-to-software interoperability. Interoperability means the ability of information and communication technology (ICT) systems and of the business processes they support to exchange data and to enable the sharing of information and knowledge,<sup>6</sup> meaning in this situation that interoperability enables authorities to change between different software systems without losing information or forcing a complete overhaul of their IT system. The presence of interoperability would also diminish the vendor dependence around the software since products and services from different producers would be made compatible, thus making it easier and more efficient to integrate one public system with another for the exchange of data, which would also benefit rival competition in the market and consequently lowering prices and raise efficiency.<sup>7</sup>

So if the objective is to create and support interoperability, what is the most efficient way to accomplish that objective?

## 2.2 Interoperability Standards

The consensus between authorities as well as other stakeholders seems to be that the use of common interoperability standards is the best way to create interoperability and prevent problems in ICT procurement.<sup>8</sup>

Standards are agreed upon ways of doing things. More exactly a “standard” is a set of technical specifications which either does, or intends to, provide a common design for a product or process. When done correctly standards should lead to efficiencies and consumer benefits. Standardization activities can be considered especially important in markets like ICT industries, where the need for devices and networks to interoperate creates benefits and incentives for industry participants to devise common technical standards.<sup>9</sup> For there to be real interoperability there is a need for the different manufacturers to use the same specification and for them to do that there is a need for standardization, hence for the creation of interoperability there is a need for standardization.<sup>10</sup>

---

<sup>5</sup> Europe Economics Chancery House” (2011) Draft guidelines and measures to improve ICT procurement, Survey results” and Björn Lundell “e-Governance in public sector ICT procurement: what is shaping practice in Sweden?”

<sup>6</sup> Definition from EUROPEAN INTEROPERABILITY FRAMEWORK FOR PAN-EUROPEAN eGOVERNMENT SERVICES “EIF” version 1.0

<sup>7</sup> R.A Ghosh (2005) “An economic basis for open standards” FLOSSPOLs project

<sup>8</sup> See generally K Blind, S Gauch, R Hawkins (2010) “How stakeholders view the impacts of international ICT standards” and M Shaikh, T Cornford “Total cost of ownership of open source software: a report for the UK Cabinet Office supported by OpenForum Europe”

<sup>9</sup> M MacCarthy (2009) “Open Standards, Competition and Patent Policies”

<sup>10</sup> COMMUNICATION FROM THE COMMISSION “A strategic vision for European standards: Moving forward to enhance and accelerate the sustainable growth of the European economy by 2020”

The Commission has in “A Digital Agenda for Europe” recognized the problems of vendor lock-in in ICT procurement and highlights the need for standards to create interoperability between devices, applications, data repositories, services and networks so to deal with the problems and enable technological progress.<sup>11</sup> The Commission and other department have for this purpose created a number of Communications and Frameworks to help ICT procurers avoid lock-in and become more efficient. The European Union has also put increased emphasis on standardization in general to promote technological advances and innovation within the European Community.

To achieve these aspirations the Commission has created Regulation No 1025/2012 (Regulation), the Standardization Regulation, for which the objectives are to promote *interoperability*, *innovation* and *competition*.<sup>12</sup> Regarding the issue of ICT procurement and interoperability the most important provision of the Regulation is Article 13, which in paragraph 1 states that:

*“Either on proposal from a Member State or on its own initiative the Commission may decide to identify ICT technical specifications that are not national, European or international standards, but meet the requirements set out in Annex II, which may be referenced, primarily to enable interoperability, in public procurement”*.<sup>13</sup> A following question is then if this provision would accomplish its objective of benefiting competition.

## 2.3 Standards and Competition Law

When a standard becomes widely implemented on the relevant market, which is necessary for the standard to be effective and beneficial, it consequently means that technology outside the standard will be implemented to a lesser extent, thus reducing inter-technology competition. This also means that products that don’t implement the standard will consequently experience difficulty in gaining access to the market and to make profits, implying that a successful standard can constitute a form a barrier to market entry.<sup>14</sup> So a widely implemented standard have some disadvantages from a competition perspective.

The competitive advantages however trump the disadvantages. Beyond the above mentioned interoperability benefits standardization also stabilizes the technology market mitigating risks for producers while at the same time increases the speed in adaptation. Standardization also promotes technological innovation that usually enables new and improved products to

---

<sup>11</sup> See COMMUNICATION FROM THE COMMISSION “A Digital Agenda for Europe”

<sup>12</sup> REGULATION (EU) No 1025/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 25 October 2012 see preamble for scope

<sup>13</sup> REGULATION (EU) No 1025/2012 Article 13 §1

<sup>14</sup> M Glader “OPEN STANDARDS: PUBLIC POLICY ASPECTS AND COMPETITION LAW REQUIREMENTS” in *European Competition Journal* (2010) VOL. 6 NO. 3 page 614

appear on the market.<sup>15</sup> That is why standards are considered as increasing competition and thus benefiting the economy while lowering costs and thus benefiting the consumers. Standard agreements are because of these positive effects considered in the Horizontal Guidelines to presumably not distort competition under Article 101(1) TFEU because they would most likely fulfill the conditions laid down in Article 101(3) TFEU which would render the assessment of the agreement as pro-competitive.<sup>16</sup>

When considering the benefits and deficits of standardization from a competition perspective the question of “what” is being standardized, is also an important factor. On the ICT market the need for common standards is considered more significant than on most markets due to network effects,<sup>17</sup> meaning that the standardization advantages are the greatest regarding interoperability software. So competition within the standard is to prefer over inter-technology competition, since inter-technology competition in markets with strong network effects tends to create dominant positions for the manufacturer of key technology and thus closing out the competitors, and in the end causes a decline in competition. Competition within the standard works, on the contrary, in a more inclusive fashion in the presence of network effects and creates the intended benefits of standardization, such as increased competition, lower prices and a more innovative market.<sup>18</sup>

Despite the general benefits, standardization is not immune to causing negative effects on competition, especially through “*reduction in price competition, foreclosure of innovative technologies and exclusion of, or discrimination against, certain companies by prevention of effective access to the standard*”, which is recognized in the Horizontal Guidelines.<sup>19</sup>

## 2.4 IP Licensing in ICT Standards

A complicated question concerning standardization that can cause competition problems to arise is the question of how to deal with the Intellectual Property Rights (IPR) included in the standard. There are many different technologies involved that may or may not be covered by patents when setting a standard, especially in the ICT market. The owners of the patented technology that has been included in the standard could, if not restricted, become gatekeepers to the technology and thus the market itself and enjoy a significant increase in market power due to licensing.<sup>20</sup> Such a situation could present unfair advantages to IPR holder while having the

---

<sup>15</sup> M Glader (2010) page 614 and COMMUNICATION FROM THE COMMISSION “Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements” §263

<sup>16</sup> COMMUNICATION FROM THE COMMISSION “Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements”

<sup>17</sup> M Glader (2010) page 615

<sup>18</sup> M MacCarthy (2009) page 15

<sup>19</sup> COMMUNICATION FROM THE COMMISSION “Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements” §264

<sup>20</sup> M Glader (2010) page 614

opposite impact on their competitors, thus creating barriers to entry, a strong possibility for dominant position and a general distortion of competition on the relevant market.

To mitigate the risk of such competitive complications most SSOs implements licensing policies to ensure that the standard can be used by as many as possible while simultaneously attracting as many technology holders to participate in the standardization process as possible, to not exclude technology that could potentially benefit the standard.

The IPR approach of Article 13 of the Regulation is found in §4 (c) of Annex II and states: *intellectual property rights essential to the implementation of specifications are licensed to applicants on a (fair) reasonable and non-discriminatory basis ((F)RAND), which includes, at the discretion of the intellectual property right-holder, licensing essential intellectual property without compensation.*<sup>21</sup> This means that the licensing obligation for the ICT interoperability standards is the so called *FRAND* which in this case also includes the possibility for licensing on *royalty-free* (RF) basis. The inclusion of *FRAND* in the Regulation stems from the promotion of *FRAND* in the Horizontal Guidelines that regulates standardization agreements in European Competition Law.

*FRAND* stands for “*fair, reasonable and non-discriminatory*”, “*reasonable*” is a term designed to indicate the royalty fee must somehow be balanced, not excessive in terms of the connection to the benefits conferred by the underlying technology. “*Fair*” suggests just treatment of each licensee in respect to the circumstances of implementation. “*Non-discrimination*” implies that the licensee is not allowed to treat similarly situated licensees differently when imposing fees or other terms and conditions, and also that the patent holder cannot deny the right to license.<sup>22</sup> Agreeing to these conditions is intended to prevent the IPR holders from potential licensing abuse and decrease the monopolistic advantages that often are the result of having ones technology included in an important standard.

*FRAND* is a licensing form used by many SSOs and is effective as well as popular in many technological industries, such as the telecom market. In the IT sector however, the *FRAND* approach is not as commonly used in standardization as in other industries.<sup>23</sup>

*A majority of IT stakeholders on the other hand, especially in the software industry and among its users, are of the opinion that a more satisfactory level of interoperability can be achieved using IPR policies which could be perceived to differ from a (F)RAND approach.*<sup>24</sup>

---

<sup>21</sup> REGULATION (EU) No 1025/2012 Annex II ” REQUIREMENTS FOR THE IDENTIFICATION OF ICT TECHNICAL SPECIFICATIONS” §4 (c)

<sup>22</sup> M MacCarthy (2009) page 10

<sup>23</sup> M Glader (2010) page 642

<sup>24</sup> COMMISSION OF THE EUROPEAN COMMUNITIES, WHITE PAPER “Modernizing ICT Standardization in the EU- The Way Forward” page 9

## 2.5 FRAND vs RF

The SSOs in the ICT market seem to hold a preference towards RF in the place of FRAND when setting standards.<sup>25</sup> The RF approach have been openly supported by several important stakeholders and governments to take priority over FRAND when concerning matters of interoperability, to enhance efficiency, innovation, interoperability as well as reaching the widest possible implementation of the standard.<sup>26</sup> It has been suggested that the fact that the majority of software interoperability standards are available on a RF basis has been the key to the innovation around internet and web technologies,<sup>27</sup> leading many to the opinion that software interoperability standards should be licensed on RF terms.

On the other hand the RF approach have also received its fair share of condemnation from influential private software lobbying groups as well as from a number of SSOs for having negative effects on innovation and competition. The negative impacts highlighted by the opposition of RF is that by taking away the possibility to receive royalty payments the incentive for innovative companies relying on such an income to keep innovating is subsequently removed, and thus rendering the standard without important technologies as well as hindering innovation.<sup>28</sup> Another important question stemming from the critique is, if mandating RF standards would be considered discriminatory against companies whose business model is based on collecting licensing fees for their patented technology and thus restricting competition by making these companies reluctant to partake in the standardization process, which could also result in a lower quality standard.<sup>29</sup>

*This background gives rise to the questioning; if including a RF requirement in Article 13 of the Regulation would be more beneficial than the currently used FRAND from a European Competition perspective. Would RF be better for interoperability and prevent vendor lock-in more efficiently and thus have more pro-competitive effects?*

## 2.6 Article 101(3) TFEU

When examining if the pro-competitive effects of a restriction outweighs the negative effects, one has to follow the procedure laid down in Article 101(3)

---

<sup>25</sup> M Glader (2010) page 642

<sup>26</sup> See inter alia ECIS Statement on the proposed new European Interoperability Framework (2010) and N Kroes "How to get more interoperability in Europe Address"

<sup>27</sup> D Weitzner (2004) "Standards, Patents and the Dynamics of Innovation on the World Wide Web"

<sup>28</sup> C Mair (2012) "Openness, Intellectual Property and Standardization in the European ICT Sector" page 2-3

<sup>29</sup> M Glader (2010) page 642



TFEU. This is generally done when a restriction of competition have been found under Article 101(1) TFEU and Article 101(3) TFEU can then be invoked as a defense.<sup>30</sup> This is not saying that a RF requirement would be considered infringing Article 101(1) TFEU if included in the Article, but when making an assessment of the positive and negative effects from a Competition Law perspective it is done following the procedure in Article 101(3) TFEU.

For a restriction to be deemed pro-competitive it needs to fulfill the four cumulative conditions stipulated in Article 101(3) TFEU, of which two are positive and two are negative. These conditions are that;

- *The agreement (in this case the provision) must contribute to improving the production or distribution of products or contribute to promoting technical or economic progress, that is to say, lead to efficiency gains*
- *Consumers must receive a fair share of the resulting benefits, that is to say, the efficiency gains*
- *The restrictions must be indispensable to the attainment of those objectives, that is to say, the efficiency gains*
- *The agreement (in this case the provision) must not afford the parties the possibility of eliminating competition in respect of a substantial part of the products in question*<sup>31</sup>

From Article 2 of Council Regulation (EC) No 1/2003 that regulates implementation of Article 101(3) TFEU it follows that the burden of proof for 101(3) TFEU is on the one claiming benefit from the provision, which in this case would be the proponents of RF standardization.<sup>32</sup> The discussion will therefore put the emphasis on RF and the impact it might have on competition and focus less on FRAND.

The comparison between RF and FRAND regarding software interoperability standards is to a certain extent a discussion about open-source and proprietary software. For more general information on open-source and proprietary software and their relationship with the different licenses that might be helpful to fully comprehend the following discussion I suggest reading the linked information.<sup>33</sup>

---

<sup>30</sup> COMMUNICATION FROM THE COMMISSION “Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements” § 20

<sup>31</sup> COMMUNICATION FROM THE COMMISSION “Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements” § 49

<sup>32</sup> Council Regulation (EC) No 1/2003 of 16 December 2002 on the implementation of the rules on competition laid down in Articles 81 and 82 of the Treaty, Article 2

<sup>33</sup> See inter alia <http://www.linfo.org/proprietary.html> for proprietary software definition and <http://opensource.com/resources/what-open-source> and <https://www.gnu.org/copyleft/> for information about open source and copyleft licenses which is a commonly used license for open source projects

## 3 X/Open

Before initiating the discussion concerning the conditions in Article 101(3) TFEU it might be interesting to see how the Commission has dealt with similar situations. There are not many cases that bear resemblance to the situation at hand but the *X/Open Case* from 1986 have some clear similarities.<sup>34</sup>

In the case, several important software companies from different countries formed the X/Open group with the objective to create open industry standards consisting in a stable but evolving common application environment for software based on AT&T's operating system "*Unix*".<sup>35</sup> Different non-interoperable versions of Unix existed on the market meaning that applications made for one Unix version would have to be modified to be compatible with another version. The group seeking to solve that problem aimed to select appropriate interfaces that national and international standardization bodies could select to create a common software environment through interoperability.<sup>36</sup>

The X/Open group had decided on restrictive requirements for membership, which demanded *inter alia* that applicants have IT revenues of over 50 million US dollars per year, as well as limiting admission to significant players in the IT market with deep knowledge of Unix.<sup>37</sup> The question that then arose was if these requirements constituted a distortion of competition. The Commission first confirmed that there were restrictions on membership and that there were competitive disadvantages for non-members in not being able to impact the standards as well as advantages for the members in the possibility to influence the standard, better know-how and first-mover advantages. Based on this the Commission drew to the conclusion that the requirements for membership in the X/Open group constituted a competitive distortion under Article 101(1) TFEU.<sup>38</sup>

The next step for the Commission was to examine the overall advantages and disadvantages of the restriction using Article 101(3) TFEU. The Commission was of the opinion that the advantages of creating an open industry standard that enables interoperability and establishes a platform for innovation clearly outweighed the possible disadvantages caused by the group.<sup>39</sup> The Commission found that the technological efficiencies would benefit the consumers by making an increased number of applications available as well as that the increased interoperability would render users less dependent on the manufacturer of their system and thus increasing

---

<sup>34</sup> Commission decision 87/69/EEC of 15 December 1986 relating to a proceeding under Article 85 of the EEC Treaty (IV/31.458 ° X/Open Group)

<sup>35</sup> [http://www.unix.org/what\\_is\\_unix.html](http://www.unix.org/what_is_unix.html) for information on Unix OS

<sup>36</sup> Commission decision 87/69/EEC §1-5

<sup>37</sup> Commission decision 87/69/EEC §12-14

<sup>38</sup> Commission decision 87/69/EEC §30-41

<sup>39</sup> Commission decision 87/69/EEC §42

consumer options. Concerning the indispensability of the restriction the Commission found that it was necessary for the efficiency of the group that they had the ability to only include members of a certain stature and know-how in the IT market and especially regarding the Unix operating system. The restriction was thus considered indispensable for the attainment of the efficiencies. Regarding possible elimination of competitors it was clear that the group was going to offer the products developed between themselves and other competitors on an open basis, so no possibility to eliminate competition would stem from the agreement, all conditions in Article 101(3) TFEU was thus fulfilled.<sup>40</sup>

This case is rather old and is not an exact replica of the situation at hand but since it concerns software interoperability standards there are similarities and important indications to be taken from the reasoning of the Commission. The type of restriction in the form of excluding competitors from influencing the standard in X/Open was more apparent than a RF requirement, which would rather make patent holders reluctant to join the standardization process than forbidding them to do so. But the effect is to a certain degree the same in as much as both would result in competitors left out of the standardization process because of the restriction.

The Commission confirmed that enabling interoperability, promoting innovation and creating new products for consumers are to be considered efficiencies that fulfill the first condition of Article 101(3) TFEU.

Hence, this case shows the kind of efficiencies that should be realized regarding interoperability standards and the way the Commission handled a similar situation in 1986.

---

<sup>40</sup> Commission decision 87/69/EEC § 43-47

# 4 The four Conditions

## 4.1 First Condition

### 4.1.1 Efficiencies

According to the first condition of Article 101(3) TFEU, the restrictive agreement must contribute to improving the production or distribution of goods or to promoting technical or economic progress, hence “produce efficiencies”. These efficiencies are to be assessed from an objective standpoint and from the case law it follows that subjective efficiency especially as a result of a dominant position is not to be seen as efficiencies within the meaning of this condition.<sup>4142</sup> To find out how to interpret what actually constitutes “efficiencies” the “Guidelines on the application of Article 81(3) (101(3)) of the Treaty” (Guidelines) must be consulted. The efficiencies described in the Guidelines are divided into two groups, “Cost” and “Qualitative”. Since most of the potential cost efficiencies gained by using RF and open-source software are related to the consumer I have chosen to discuss only the qualitative efficiencies in this chapter leaving the cost efficiencies to the later discussion regarding consumer benefits.

So what counts as qualitative efficiencies? From the Guidelines and case law it follows that promoting innovation and the making available of new or improved products are to be seen as such efficiencies.<sup>4344</sup> As well as technological advancement in the form of enhancing interoperability<sup>45</sup> or making products, updates and services available to the consumer quicker. The latter example could be seen as effectiveness in the stricter sense.<sup>46</sup> The objective of the Regulation is to promote interoperability and innovation and those efficiencies were also recognized by the Commission in the X/Open case, those are thus the efficiencies that the focus will be on in this chapter.

---

<sup>41</sup> COMMUNICATION FROM THE COMMISSION (2004/C 101/08) Guidelines on the application of Article 81(3) of the Treaty §49

<sup>42</sup> See JOINED CASES 56 AND 58/64 “Consten Grundig”

<sup>43</sup> COMMUNICATION FROM THE COMMISSION (2004/C 101/08) Guidelines on the application of Article 81(3) of the Treaty §71

<sup>44</sup> See Commission decision in GEAE/P&W (OJ 2000 L 58, p. 16) and Asahi/Saint Gobain (OJ 1994 L 354, page 87)

<sup>45</sup> See Commission Decision in Atlas (OJ 1996 L 239, p. 23)

<sup>46</sup> COMMUNICATION FROM THE COMMISSION (2004/C 101/08) Guidelines on the application of Article 81(3) of the Treaty p.71

## 4.1.2 Innovation and new Products

The main critique against RF requirements in ICT standardization is that such requirements would undermine the incentive for patent holders to contribute their latest technology to the standard, resulting in less innovation and competition regarding European products.<sup>47</sup> This critique has been expressed by first and foremost the proprietary software lobby who openly voiced their concern to the European Union as well as to Member States that are considering procurement initiatives that would favor the RF approach.<sup>48</sup> There have also been those with less personal incentive in the promotion of royalty bearing standards that have recognized the lack of incentive to innovate as a weakness in the RF approach.<sup>49</sup>

There is a large fluctuation between the different markets regarding the potential need for royalties as innovation incentives, and the RF approach would not be appropriate for all of them. Royalties are needed on markets such as GSM technologies where they act as incentive to balance the capital requirements for the production of expensive hardware, and licensing and royalties are only a small part of the total cost in that situation.<sup>50</sup> But can the same thing be said regarding interoperability software; does lack of potential royalties stifle innovation, or does it on contrary enable and support it? The development of the “Web” and the “Open-Source” movements would certainly support the latter of these suggestions.

The Web was started with the first web page in 1991 and had in 2004 already over 2 billion pages running, connecting people and companies all over the world, enabling many new business and products to evolve such as e-commerce and social networking.<sup>51</sup> The Web is also the birthplace of many successful companies, e.g. Google, one of the biggest and most innovative companies in the world that started as and still is mostly famous for being a search engine which helps users locate pages on the Web.<sup>52</sup> Among other prolific web companies are “Facebook”, “eBay”, “Amazon.com” and “Yahoo!”. This briefly shows the tip of the iceberg that is the innovative capacity of the Web.

One of the key factors behind this innovative potential is that the Web is guided by standards that ensure the freedom for anyone to create and use websites without paying royalties. All the key web standards recommended by W3C, the standard organization of the Web<sup>53</sup> were in fact created to be implemented without royalty payments. The W3C is one of the few large SSOs that have a strict RF policy, which based on the growth and innovation of the Web does not seem to have slowed them down. Neither

---

<sup>47</sup> See BSA letter (2010) in regard to the draft of EIF version 2.0

<sup>48</sup> Business Software Alliance (BSA), (composed of, *inter alia*, Microsoft, Apple and Adobe) <http://www.bsa.org/>

<sup>49</sup> See e.g. T Simcroe (2005) “Open Standards and Intellectual Property Rights” page 31

<sup>50</sup> See R.A Ghosh (2005) and M MacCarthy (2009) page 13

<sup>51</sup> D Weitzner (2004) “Standards, Patents and the Dynamics of Innovation on the World Wide Web”

<sup>52</sup> <http://en.wikipedia.org/wiki/Google>

<sup>53</sup> World Wide Web Consortium (W3C) <http://www.w3.org/>

does their RF policy make IT companies reluctant to join them, with members spanning from small computer companies to technology giants like Apple, Microsoft<sup>54</sup> and Google they basically cover the entire industry. On the contrary it has been suggested that it is thanks to their RF policy that the members can effectively work together to develop key standards<sup>55</sup> in situations where they otherwise would have had to overcome licensing and royalty negotiations that could have made the collaboration impossible or at the very least more troublesome and time-consuming. The RF environment surrounding web standards is therefore seen as a key factor in the rapid and exponential development of the Web. The absence of royalties can thus seemingly enable collaborations and make innovations possible that otherwise would not have come to fruition.<sup>56</sup>

The question can be made if the members join W3C to have the opportunity to participate in setting some of the most important standards in the industry despite of the RF policy, or if the policy itself is one of the reasons why so many stakeholders are willing to participate?

At one point the W3C patent policy group presented a suggestion to include both FRAND and RF as licensing possibilities for their standards. The negative reactions from the public and a large number of members however, caused the suggestion to be abandoned and never implemented. Some members have promoted or suggested the inclusion of FRAND as an option, but the overwhelming majority supports the RF policy and the reactions from the public have only been positive.<sup>57</sup>

The creator of the Web Sir Tim Berners-Lee (knighted for his accomplishments regarding the Web) has always shown support for the RF requirement; *“the decision to base the Web on royalty-free standards from the beginning has been vital to its success until now. The open platform of royalty-free standards enabled software companies to profit by selling new products with powerful features, enabled e-commerce companies to profit from services that on this foundation, and brought social benefits in the non-commercial realm beyond simple economic valuation. By adopting this Patent Policy with its commitment to royalty-free standards for the future, we are laying the foundation for another decade of technical innovation, economic growth, and social advancement.”*<sup>58</sup> Clearing any potential doubts as to whether the community that created the Web considers royalties a positive or negative influence on internet innovations.

Another good example where RF innovation has prospered is within the Open-source community. Even though the Web and open-source are far from separate since the Web is based partly on open-source software, I have chosen to discuss the subjects somewhat separately.

---

<sup>54</sup> Both also members of BSA

<sup>55</sup> The “XML 11” project including, Microsoft, Packard-Bell, Sun and eight other collaborators

<sup>56</sup> D Weitzner (2004) “Standards, Patents and the Dynamics of Innovation on the World Wide Web”

<sup>57</sup> Tim Berners-Lee, W3C Director (2003) “Director’s Decision, W3C Patent Policy”

<sup>58</sup> D Weitzner (2004) “Standards, Patents and the Dynamics of Innovation on the World Wide Web”

The basis of open-source is freedom for the user to do more or less whatever he or she wants with the software, and the licensing scheme places demands on the manufacturer rather than on the consumer. This freedom includes rewriting, developing and redistributing the software, for commercial as well as uncommercial purposes.<sup>59</sup> Because of the “freedom” that open-source gives to its users and potential developers; it can arguably be seen as an optimal platform for innovation.

The software most representative of the open-source movement and possibly the best example of the innovative potential of the open-source platform is “Linux”, an open sourced freely-modifiable operating system that holds great resemblance to Unix, the operating system in the X/Open case. Since the beginning of its development in 1991 the Linux operating system has been modified, developed and “distributed” by many companies<sup>60</sup> re-tailoring the operating system for desktops as well as servers. It has grown exponentially on several markets and has become the leading operating system for both servers and mainframes, and when this thesis is written 485 of the top 500 supercomputers in the world are running on Linux rendering it the dominant platform in one of the most technologically important industries.<sup>61</sup> The freedom to change and develop the software is also making it adaptable to different firmware systems and thus prominent on several markets that hold little resemblance to one another, e.g. “smart-tv” and network routers.<sup>62</sup> But the most recognizable Linux based product is most likely Google’s operative system “android” which is the number one operating system for smartphones and tablets in the world and is built on top of the Linux system.<sup>63</sup>

The original Linux developers haven’t been the ones driving the innovation in and around the Linux community but have instead laid the foundations for others to innovate, which have been a hugely successful method. What is especially interesting for this discussion is that all the innovations and new products spawned from Linux have been completely without the incentive of royalties, since Linux is registered under a “copyleft” license, people and/or companies<sup>64</sup> are free to use and redistribute the new products that they produce based on the original code, but not to demand royalty payments for those derivative products.<sup>65</sup>

It is the freedom to produce derivative products that sets apart the open-source from proprietary software when it comes to innovation. On the office suite market for example, the proprietary software MS Office is the dominant software (*de facto* standard), but the biggest competitor Open Office has still spawned a large number of derivatives<sup>66</sup> despite of its

---

<sup>59</sup> See <http://opensource.org/definition> for open source license definitions

<sup>60</sup> See [http://en.wikipedia.org/wiki/List\\_of\\_Linux\\_distributions](http://en.wikipedia.org/wiki/List_of_Linux_distributions) for full list of Linux distributions

<sup>61</sup> See <http://www.top500.org/statistics/sublist/> for full list

<sup>62</sup> [http://en.wikipedia.org/wiki/List\\_of\\_router\\_and\\_firewall\\_distributions](http://en.wikipedia.org/wiki/List_of_router_and_firewall_distributions), [http://en.wikipedia.org/wiki/List\\_of\\_smart\\_TV\\_platforms\\_and\\_middleware\\_software](http://en.wikipedia.org/wiki/List_of_smart_TV_platforms_and_middleware_software) for examples

<sup>63</sup> See <http://marketshare.hitslink.com/operating-system-market-share.aspx?qprid=8&qpcustomd=1&qptimeframe=M>

<sup>64</sup> *Inter alia* Google, Red Hat, Samsung etc

<sup>65</sup> For more information about “Copyleft” see <https://www.gnu.org/copyleft/>

<sup>66</sup> See <https://wiki.openoffice.org/wiki/DerivedWorks> for list of derivative works

significantly smaller market share. On the contrary, MS Office has not produced any derivative products since its license strictly forbids derivative works, making it less beneficial from an innovation standpoint.<sup>67</sup> The fact that open-source software is “free” and developers are not looking for royalty payments might actually give a boost to innovation and productivity rather than preventing it. Since the development of proprietary software depends on the R&D funding from the manufacturer of the product, the tradeoff will have to be made between profit and innovation based on the future profit from the expected R&D results. In the situation that a proprietary software is dominant on the relevant market there is thus a strong possibility that the bigger the market share enjoyed by that software the less the incentive will be to innovate, since the sales most likely will be the same regardless, because of network effects.<sup>68</sup> In the open-source community on the other hand the situation is quite different since developers contribute for free, and despite lack of monetary incitement the open-source community has thus far had little problems attracting skillful developers who prefer working in open organizational cultures. People are generally eager to help and improve the things they use to enhance their own experiences as well as others and with open-source that opportunity is given to every single user.<sup>69</sup> As a consequence, more developers will contribute to an open-source than proprietary software in average.<sup>70</sup> So in the situation of high market shares where a proprietary company might lose incentive to innovate, the open-source software would get an increased number of potential developers and thus become more effective and innovative as the market share and numbers of users grow.

Not only the open-source and web communities have a positive attitude towards RF requirement in the software industry, there are also prominent ICT companies of the more traditional kind that despite having large IP portfolios still support RF licensing. The perhaps most prominent example, ECIS<sup>71</sup> with members such as IBM, Oracle and Nokia, some of the most innovative companies in the industry, is of the opinion that “*the open-source is a powerful movement that drives innovation forward*”.<sup>72</sup> These companies also donate resources to the development of open-source and clearly see a lucrative innovative market, even without royalty based incentives.<sup>73</sup>

In the software market not only does patents and royalty not seem to be a necessary incitement for innovations, voices in the industry have also suggested that patents and royalties “*too often these days they serve merely*

---

<sup>67</sup> See generally, R.A Ghosh (2005)

<sup>68</sup> J-M Dalle, (2001) “OPEN-SOURCE vs. PROPRIETARY SOFTWARE” page 5

<sup>69</sup> “Why Open-Source Principles Are a Recipe For Innovation”

<http://www.forbes.com/sites/ashoka/2012/07/25/why-open-source-principles-are-a-recipe-for-innovation>

<sup>70</sup> J-M Dalle, (2001) pages 5-6

<sup>71</sup> European Committee for Interoperable Systems (ECIS) (2007) “It is standard industry practice to offer interoperability information royalty free”

<sup>72</sup> “ECIS Statement on the proposed new European Interoperability Framework 13/10” 2010, written in response to the letter from the BSA

<sup>73</sup> See inter alia, [http://www.nytimes.com/2005/01/11/technology/11soft.html?\\_r=0](http://www.nytimes.com/2005/01/11/technology/11soft.html?_r=0),

<http://www.infoworld.com/article/2612196/linux/ibm-s--1-billion-linux-investment--buying-power.html> and

<http://www.teslamotors.com/blog/all-our-patent-are-belong-you>



to stifle progress”<sup>74</sup> and that “software interoperability standards should be available royalty-free because of the high potential of innovation that lies in the integration of technologies and on top of the standards”.<sup>75</sup>

### 4.1.3 Interoperability

“Interoperability means the ability of information and communication technology (ICT) systems and of the business processes they support to exchange data and to enable the sharing of information and knowledge”.<sup>76</sup> It is in other words the enabling of different software to work together to connect businesses, organizations and people. Enabling interoperability is as stated earlier the scope of ICT standardization, and one of the key objectives in the Digital Agenda of the Union, representing the increased priority of this question for the future of European e-procurement.<sup>77</sup> We have also seen that without interoperability, governments and authorities will run an increased risk of vendor lock-in.<sup>78</sup> Consensus is clear as to the facts that interoperability is desirable, that lock-in is negative and that standards are the most effective tool available to solve these problems. But are there benefits in using RF standard to achieve them?

The Digital Agenda that stipulates the objectives of the Union in regards to interoperability and standards starts with proclaiming that: “*The internet is the best example of the power of technical interoperability. Its open architecture gave interoperable devices and applications to billions around the world.*”<sup>79</sup> The key behind the success of the Internet has been the interoperability standards that constitute the base of its development. These standards are developed by the standardization body “IETF”,<sup>80</sup> that unlike the W3C does not require RF for a technology to be eligible for recommendation. Instead they have as in Article 13 the choice between FRAND and RF to not exclude any technology that could possibly be beneficial to the Internet.<sup>81</sup> The IETF even though lacking a RF policy hold a clear preference towards RF and Internet standards are almost always available on a RF basis (97 %) including the key internet standards, such as the well-known transmission control protocol and internet protocol (TCP/IP). The fact that no permissions or royalties restricted the use of the Internet was a key factor in creating the Web which is often used synonymous with the Internet and is itself one of the best examples of well-

---

<sup>74</sup> Elon Musk, CEO of Tesla Motors (2014) “all our patents belong to you”

<sup>75</sup> Opinion of Jochen Friedrich Head of Technical Relations Europe in IBM, in European Commission report (2012) “Implementing FRAND standards in Open Source: Business as usual or mission impossible?”

<sup>76</sup> Definition from, “EUROPEAN INTEROPERABILITY FRAMEWORK FOR PAN-EUROPEAN eGOVERNMENT SERVICES version 1.0 p 1.1.2

<sup>77</sup> See COMMUNICATION FROM THE COMMISSION “A Digital Agenda for Europe”

<sup>78</sup> COMMUNICATION FROM THE COMMISSION “Against lock-in: building open ICT systems by making better use of standards in public Procurement”

<sup>79</sup> COMMUNICATION FROM THE COMMISSION “A Digital Agenda for Europe” § 2.2

<sup>80</sup> Internet Engineering Task Force (IETF) <https://www.ietf.org/>

<sup>81</sup> Intellectual Property Rights (IPR) Policy of IETF, <https://www.ietf.org/rfc/rfc3979.txt>

functioning software interoperability.<sup>82</sup> The Web is also what made the Internet usable and popular among “regular” people, and unquestionably a key factor in making the Internet as utilized and interoperable as it is today. It thus seems probable that the Internet and the Web would not be as interoperable as they are today if the standards they are built on required royalty payments.

In its efforts to promote interoperability the IDABC<sup>83</sup> developed the EIF (European Interoperability Framework) a set of interoperability guidelines, that have stirred up quite the discussion regarding whether a RF requirement is necessary for maximal interoperability. In the first edition, the EIF 1.0 it was stated that a standard was to be “made irrevocably available on a royalty-free basis” to be considered an “open standard” together with a clear recommendation for using such standards. In the same recommendation was also an encouragement to access the benefits of open-source software,<sup>84</sup> thus expressing a clear preference towards the use of RF standards to fully enable interoperability. The definition of “open” in the EIF 1.0 was however criticized by the proprietary software lobby (BSA) during the consultation for the EIF 2.0 version resulting in the removal of the RF requirement and the promotion of open-source in the official version. The 2.0 version was also published without a clear definition of what is to be considered “open” as to not give preference to a specific licensing approach.<sup>85</sup>

Many from the public as well as the software industry have since then claimed that IDABC focused too much attention to the views of the BSA and disregarded the open-source community and thus neglecting interoperability in order to promote political aims.<sup>86</sup> One of the most prominent defenders of RF requirements in these discussions has been ECIS, who in an open statement supported the definition in EIF 1.0 in that “to be fully open, a software interoperability specification may not be encumbered with running intellectual property royalties, and that where equivalent functionality is provided by a specification that does not require payment of IPR royalties to implement, that specification is more open and should be favored, while not precluding public administrations from choosing whichever technical solution they please”.<sup>87</sup>

A perhaps even stronger supporter of RF standards as optimal in creating interoperability is the European Commission Vice-President for the Digital Agenda, Neelie Kroes who have stated;

*“Let's imagine two competing standards that are both technically excellent for a certain task but differ in the level of constraints for implementers. Which of these two standards do you think will see more implementation*

---

<sup>82</sup> See Tim Berners-Lee (2010) “Long Live the Web: A Call for Continued Open Standards and Neutrality”

<sup>83</sup> Interoperable Delivery of European eGovernment Services to public Administrations, Businesses and Citizens (IDABC)

<sup>84</sup> EIF version 1.0 page 9

<sup>85</sup> See EIF version 2.0

<sup>86</sup> See e.g. H Roy, K Gerloff (2010) “EIFv2: Tracking the loss of interoperability” and ECIS (2010) “ECIS Statement on the proposed new European Interoperability Framework”

<sup>87</sup> ECIS (2010) “ECIS Statement on the proposed new European Interoperability Framework”

*and use, including for unforeseen purposes? The one that you can download from a website and that you can implement without restrictions? Or the other one which you have to buy, which is restricted to certain fields of use and which requires royalty payments for embodied intellectual property rights (IPR)? The answer is obvious. And that is why everybody who cares about interoperability should care about the financial conditions for the use of standards as well as the indirect constraints imposed on third parties: the fewer constraints the better”.*<sup>88</sup>

Even though the EIF 2.0 does not include a preference for RF and open-source as in the 1.0 version, it puts the main focuses on “openness” as the key to enable interoperability, even though the explanation given for the term is rather vague.<sup>89</sup> The reasoning behind including the FRAND option was to give incentive to innovate and to make all technology available to the standard, with or without royalty, in line with the opinions of the BSA. This can seem rather strange since defining openness in a recommendation could hardly be considered excluding other technologies, and if a technology is more or less “open” interoperability wise, should that not be defined without regards to potential financial incentives of innovation? Would the ideal situation regarding openness of a standard not be that all who want to implement the standard is able to do so? Well in so far as some royalty rates might be too high to allow some potential implementers to access the technology in the standard, it would not live up to this ideal,<sup>90</sup> thus making standards requiring royalty payments less “open”, in line with the opinion represented in EIF 1.0.

When it comes to openness and software, it might be difficult finding or even imagining a better model than open-source, as the name implies it has openness as its core. The open-source license is e.g. not allowed to put restrictions on other software distributed along with the open-source software as well as being technology neutral by default. This along with the already stated characteristics of open-source licenses always renders the software “fully open” (EIF1.0) and interoperable with other software whether it is a part of a standard or not.<sup>91</sup> These qualities also reduce the risk of lock-in situations occurring when using open-source and lock-in generally occurs when the consumer seeks to switch from proprietary software to an open-source alternative.<sup>92</sup> The positive effect that open-source have on lock-in is confirmed by the Swedish Competition Authority that after conducting research on the matter is recommending a prioritizing of open-source over proprietary software in order to minimize the risk of lock-in.<sup>93</sup> Avoiding lock-in have also been the number one technical objective for the public authorities that switched from proprietary to open-

---

<sup>88</sup> Quote: N Kroes from speech “How to get more interoperability in Europe” page 3

<sup>89</sup> See EIF version 2.0 § 2.1

<sup>90</sup> M MacCarthy (2009)

<sup>91</sup> See definition of open source, <http://opensource.org/osd-annotated>

<sup>92</sup> C Mair (2012)

<sup>93</sup> R Wessman (2013) ”Upphandling av IT- inlåsningseffekter och möjligheter”(E-procurement- lock in effects and possibilities)

source software, and that objective have in the clear majority of cases been successfully realized.<sup>94</sup>

Research has also shown that in a competitive market between open-source and proprietary software, when in a dominant the proprietary company will make more profit and have a bigger market share if it remains incompatible with the open-source competitor. The open-source software on the other hand would in a similar situation benefit from being compatible with the competitor due to the benefits from network effects. Meaning that when in a dominant position there is more incentive for open-source software to make itself compatible than for a proprietary alternative.<sup>95</sup> This can be seen for example on the “office suite” market, where the dominant proprietary software MS Office has been reluctant to make itself compatible with the open-source alternative.<sup>96</sup>

Several European countries have after research recognized these beneficial properties and developed policies to promote open-source by prioritizing it over other software in public procurement with the objective of enhance interoperability, Holland and the UK to name a few.<sup>97</sup> Other countries such as Sweden have taken a similar approach but instead of referencing to open-source have used the open standard definition in EIF 1.0 declaring RF standards as first choice in public e-procurement to avoid lock-in and vendor dependence.<sup>98</sup> Some countries outside of Europe have even gone so far as to completely ban royalty bearing software from public procurement of interoperability standards.<sup>99</sup>

#### 4.1.4 Other Efficiencies

Another efficiency gain would be to make technology available to the consumer quicker than would otherwise be the case, which could also be explained as strict efficiency or time efficiencies. Technology can become available later than necessary because of difficulties in the standardization process as well as hold ups regarding the technological availability. In both these situations there are some differences between using technology that is subject to royalty payments and technology that is available on RF basis.

In the standard setting process RF have some benefits over FRAND regarding effectiveness in the strict sense. Even though the scope of FRAND is to resolve or facilitate patent issues and royalty discussions, that

---

<sup>94</sup> M Shaikh, T Cornford (2011)

<sup>95</sup> See K Cheng, Y Liu, Tang (2011) “The Impact of Network Externalities on the Competition Between Open Source and Proprietary Software” and J-M Dalle (2001)

<sup>96</sup> See R.A Ghosh (2005)

<sup>97</sup> See Ministry of Economic Affairs (2007) “The Nederland in open connection, An action plan for the use of Open Standards and Open Source Software in the public and semi-public sector ”

<sup>98</sup> See SOU 2009:86 (2009) Official Rapport of the Swedish Government on “Strategi for E-governance” §§ 5.5-5.6

<sup>99</sup> E.g. India, see V Hariharan (2010) “Open standards policy in India: A long, but successful journey”

is not always the result since one of the problems with FRAND is that there is not a clear definition as to what FRAND *de facto* means in any given situation. This often results in a royalty negotiation process that in many cases causes hold ups and delays the implementation of the standard.<sup>100</sup> That problem would not occur in a RF situation because of the specificity, transparency and certainty that RF brings to the process, which eliminates the risk of hold ups. Since the royalty question is already settled there will be no negotiation. Even though the RF approach would not eliminate the risk of patent litigation, it decreases it as well as reduces risk of companies “finding” a patent included in the standard after the standard has been set which is an advantage since that phenomena occurs in standardization from time to time and can cause serious problems.<sup>101</sup>

Regarding the technological aspect of time efficiencies the difference between incentives for open-source and proprietary software plays a significant role, at least theoretically. Proprietary software producers get incentives to release improved versions only from time to time, so that users are obliged to regularly buy newer versions. Proprietary software producers thus have the incentive to wait for improvements to be sufficient to support the release of a new version, in order to optimize profit. Open-source software on the other hand is very regularly delivered to users through the release of successive versions which add new functionalities and correct bugs and add minor improvements. As a consequence, open-source software is also “continuously” more efficient than proprietary software.<sup>102</sup> Authorities in the UK have after changing to open-source based solutions experienced an astounding improvement in response time for queries and bug fixes in comparison to using proprietary software because of these reasons.<sup>103</sup> But this also depends on which software is being used, since open-source software with few competent users will be less effective than one with more users who have the skills to make upgrades and developments and the will to make them available.

## 4.2 Second Condition

### 4.2.1 “Fair Share for Consumer”

The second condition that needs to be fulfilled according to Article 101(3) TFEU is that the consumer must receive their fair share of the efficiencies generated by the restriction. So who is to be considered a “consumer” and

---

<sup>100</sup> T Simcroe (2005) page 31 and M McCarthy (2009)page 11

<sup>101</sup> M MacCarthy (2009) page 12

<sup>102</sup> J-M Dalle (2001) page 5-6

<sup>103</sup> M Shaikh, T Cornford (2011) page 26,

what is to be considered a “fair share”? According to the Guidelines, a consumer is anyone who directly or indirectly uses the products covered by the agreement or as in this case the provision.<sup>104</sup> Considering that the present discussion is regarding public procurement the term “consumer” will include the entire chain from the State to the authorities responsible for the procurement, but also other potential users of the ICT systems such as citizens in the extent they come into contact with the procured software. As to what is considered as a “fair share” it follows from the Guidelines that at the very least all actual or likely negative effect stemming from the restriction must be compensated for. So the bare minimum is that the overall effects are producing a neutral result from the consumer’s perspective while of course more positive than negative effects are to be desired.<sup>105</sup>

Consumers are to be seen as a whole and not individuals when considering the overall effect of the restriction meaning that ever single consumer does not have to gain from the efficiencies, and neither is it necessary that consumers benefit from every efficiency stemming from the restriction, but as said, the overall picture is what is to be considered. So it is necessary to recognize the advantages as well as the disadvantages of a RF requirement in order to properly assess if the consumers are receiving their fair share or not.<sup>106</sup>

When it comes to public procurement, the consumer benefits are perhaps the most important factor of all, since the objective of Article 13 is to improve and facilitate ICT procurement for the member States, as to make them more interoperable and efficient regarding cost and resources, and not to benefit certain types of companies of software. In other words, it is in this section that the efficiencies must be most prolific and if the consumers are not gaining from a potential RF requirement, there would not be much sense in having such a requirement, even if the result would be neutral. The efficiencies covered in the last chapter are of course all of them positive for the consumer for various reasons, but I have chosen to separate the efficiencies that stems directly from the production or development of the software and have thus discussed them in the last chapter. Here in this chapter the focus will be on the efficiencies and benefits that come from the actual use of RF and open-source software for public authorities. The economical efficiencies will be discussed in this chapter since the more important benefits in that regard are to be made on the consumer side, while the interoperability aspect will be discussed here as well, but from the consumer perspective. It seems natural to do so in considering both the nature of public procurement and the importance of the consumer in this situation but also because of the nature of RF software and the efficiencies that it brings.

---

<sup>104</sup> COMMUNICATION FROM THE COMMISSION (2004/C 101/08) “Guidelines on the application of Article 81(3) of the Treaty” §§ 83-84

<sup>105</sup> See COMMUNICATION FROM THE COMMISSION (2004/C 101/08) “Guidelines on the application of Article 81(3) of the Treaty” § 85 and judgment “Consten Grundig” in which the Court of Justice held that the improvements within the meaning of the first condition of Article 81(3) must show appreciable objective advantages of such a character as to compensate for the disadvantages caused

<sup>106</sup> COMMUNICATION FROM THE COMMISSION (2004/C 101/08) “Guidelines on the application of Article 81(3) of the Treaty” § 86

This evaluation of potential benefits and detriments for the consumer will to a large extent be a discussion about open-source and proprietary software because of their respective close relationships with RF and FRAND, and also since that is to a large extent how the market is represented when it comes to public procurement. More often than not the choice of the procurer is between a Microsoft OS and a Linux distribution or MS Office and OpenOffice or LibreOffice when it comes to office suites alternatives.<sup>107</sup>

There are several reasons for public authorities to choose RF software. The more obvious reason would be to save money by not paying royalties and licensing fees, but the technological advantages might in some cases be even more desirable, depending on the point of view. This discussion will first deal with the technological benefits followed by the economical.

## 4.2.2 Technological Benefit for Consumer

Open-source has gained its increased popularity among companies because it is cheaper, less vulnerable to viruses or other rogue programs, more reliable and scalable, and most important, enables users to adapt the software to their needs with full access to the source code.<sup>108</sup> Even though these factors play a part in public procurement, research has shown that the most important factor for authorities when migrating from proprietary to open-source software is to avoid lock-in,<sup>109</sup> since with a proprietary product the risks of lock-in is greater while the number of suppliers are lesser and thus consequently increasing the dependence on the supplier. Earlier this year for example Microsoft discontinued the support for their OS Windows XP<sup>110</sup> even though it was and still is the second most used OS in the world<sup>111</sup>, thus forcing users to migrate their software, since the option of creating support outside the supplier were non-existing. Authorities migrating to open-source sees the advantages with the possibilities to choose from a larger number of vendors and a more flexible and accessible support with the possibility of creating in-house support as well as an increase in vendor options. This leads to the conclusion that there are some clear benefits to be gained for public authorities in changing from proprietary to open-source software, at least theoretically. But how does that translate in reality, since there are many variables and difficulties to overcome in successfully complete an IT migration, theory and practice does not necessarily match.

Since the open-source movement is relatively young and the proprietary market is rather limited, consisting largely of different Microsoft products to

---

<sup>107</sup> See C Mair (2012)

<sup>108</sup> K Cheng, Yipeng Liu, Tang (2011)

<sup>109</sup> M Shaikh, T Cornford (2011) page 19

<sup>110</sup> See <http://www.microsoft.com/en-us/windows/enterprise/end-of-support.aspx>

<sup>111</sup> Only Windows 7 have a larger market share than Windows XP, see <http://www.netmarketshare.com/operating-system-market-share.aspx?qprid=10&qpcustomd=0&qpct=6> for information on market shares

choose from, there are not many large scale software migrations to study. But fortunately there are some.

The first open-source investment by a public authority of a significant magnitude was the ten year long project to migrate the city of Munich's administration from a vendor locked proprietary IT structure to a free and more flexible Linux based solution.<sup>112</sup> The reason behind the migration was Microsoft's decision to discontinue support for the Windows NT 4.0 OS, the discontinuance of support as mentioned being one of the more common reasons for software migration. This forced the city to make a choice between migrating to a newer Windows platform, no doubt the easier choice, or to try something new and go for the open-source alternative. After a long period of researching and preparing they decided on the latter of the two alternatives.

For this purpose they constructed their own Linux distribution called "LiMux"(Linux and Munich together) that functions as the OS and backbone of the new system and using first OpenOffice but later changing to LibreOffice as the primary productivity software with MS Office being the product used before the migration. The LiMux project includes a Linux Basis Client with automated deployment and configuration management office software adapted for team working on Linux and Windows clients WollMux, a template and form manager necessary server components for the first three items who together basically are supposed to cover all IT needs of the city. In 2013 they had successfully migrated 15 000 computers of public employees to open-source software.<sup>113</sup> After 10 years the project was completed, and even though it took longer than originally expected the city officials where more than pleased with the project and its results.

The successful IT migration have according to the municipality itself contributed not only to saving millions of Euros but also an extraordinaire level of independence from vendors, independence in its operating system, a high level of IT security and because LiMux is free and open they can share it free of cost with the citizens of the town as well as with other municipalities who would want to use it.<sup>114</sup> One important factor that has to be considered is the size and difficulty level of the project and the people responsible made no secret about the fact that it in no way had been a problem free or easy endeavor and that there is a need for careful planning, high level competence and positive government support for something like this to succeed.

What can be concluded from the LiMux project is that it is possible even for a big city<sup>115</sup> to essentially be entirely based on open-source with beneficial results, but it does not come easy.

---

<sup>112</sup> M Feilner (2013) "LiMux – the IT evolution": an open source success story like never before" page 1

<sup>113</sup> M Feilner (2013) page 1

<sup>114</sup> M Feilner (2013) page 16

<sup>115</sup> Munich being the third biggest city with around 1.5 million inhabitants



More common than the example of a whole Municipality migrating to open-source as was the case in Munich is when a single department with a less complex IT structure decides to switch from proprietary to open-source.<sup>116</sup> A case study was made about when the Swedish Police Department made just such a migration. The motivation in their case was the need to save money due to stricter budget demands, and after researching the situation the resulting opinion was that the most beneficial option available to them would be to migrate to open-source and more particularly to Linux and JBoss.<sup>117</sup> Based on the situation and their research they expected to reduce cost not only by avoiding licensing fees but also from an increased number of potential vendors, which would lower the prices, seeing as lock-in was the biggest financial problem.<sup>118</sup>

Unlike the Munich example the plan of the Swedish Police was not to use exclusively open-source software but to only change the software related to the servers and the hardware, with the employee desktops still running on proprietary software.<sup>119</sup> This shows that there are different levels of migration that can be made and authorities can choose to be more or less intrusive in the works of regular employees when migrating to open-source, and in the case of the Swedish Police the system changes were basically limited to the competences of the IT department. Even though they conducted a smaller scale IT migration in comparison to Munich, the Swedish Police were adamant about the difficulties they faced and great emphasis and investment was made on preparations and education for the IT staff before the change.

Thanks to these preparations they succeeded in realizing all the calculated benefits of switching to open-source, such as vendor independence and increased cost efficiency. But there were also some more unexpected benefits. For example, with the new IT platform, the software uses less of the system's resources leading to a performance increase sometimes as great as ten times that of the previous platform.<sup>120</sup> Because of the open format they also had it easier finding developers and support for the new solutions through the open-source community. But even more important was the opportunity to build real expertise within the department, seeing as 70% of their ICT is developed in-house, the importance of being able to resolve occurring problems quickly without the need of outside assistance is essential.<sup>121</sup>

Looking not only to these two examples, but to a large number of authorities that migrated to open-source the pattern appears to be that the potential benefits of open-source in reality are very much realizable if done

---

<sup>116</sup> E.g. TfI/Oyster (UK), ARS Aperta (France) and Opentia (Spain)

<sup>117</sup> JBoss is an application server now known as WildFly produced by Red Hat

<sup>118</sup> IDABC case study (2009) "The Swedish National Police: How to avoid locking yourself in while saving money" page 2

<sup>119</sup> Migration consisting of 1) the application server(JBoss), 2) the database (MySQL), 3) the operating system of the servers (Linux SLES) and 4) the CPUs thereof, with new and cheaper X86 hardware while using Windows as desktop OS

<sup>120</sup> IDABC case study (2009) page 5

<sup>121</sup> IDABC case study (2009) pages 5-6

correctly. Most authorities using open-source have experienced a higher level of vendor independence and reduced lock-in which has been the number one reason for migrating after saving cost, which is intertwined with the reduction of lock-in.<sup>122</sup>

The fact that the most prioritized aspects of open-source have been successfully realized should not be surprising due to the nature of the software and the research that was made by the relevant authorities beforehand. What is maybe not surprising but at least more reassuring for authorities or companies considering open-source as an alternative are that in most cases the users seem to also experience a more efficient and accessible support and update system due to the open-source community.<sup>123</sup> That was a concern for many authorities before migration since the software updates and services to a large extent depends on the open-source community which because of its voluntary nature could have been seen as less dependable; fortunately that has not been the case.

Another perhaps more expected advantage that authorities as well as companies using open-source have experienced is regarding development. When it comes to quality, flexibility and agility of development there seem to be benefits to gain due to the freedom and openness of the open-source platform since there is no need to wait for updates or do them yourself when they more often than not can be found available within the community. Accessing new software is also more efficient since the decision process is not needed when the software is downloadable for free along with updates.<sup>124</sup>

The freedom to change, expand or build upon the already existing software has in many cases been a great success both in the private and public sector rendering open-source a more efficient and flexible choice for authorities with the right competence.<sup>125</sup> Even though not being one of the more prioritized qualities of open-source according to the research, the possibility to share the software and take part in its development has also had positive effects. There are examples of authorities becoming part of important open-source software communities and others where citizens have gotten involved and contribute to becoming a part of the platform co-operation.<sup>126</sup> As a result of, many authorities that completed the IT migration are of the opinion that open-source is more able than proprietary software to in the long run provide the types of systems and services that the public sector needs, and in the way that would be best suited for public interest.<sup>127</sup>

---

<sup>122</sup> M Shaikh, T Cornford (2011) page 18

<sup>123</sup> M Shaikh, T Cornford (2011) page 26

<sup>124</sup> See H Baldwin (2014) "4 reasons why companies says "yes" to open source", M Shaikh, T Cornford (2011) and IDABC case study (2009)

<sup>125</sup> M Shaikh, T Cornford (2011) page 25

<sup>126</sup> M Shaikh, T Cornford (2009) page 29

<sup>127</sup> M Shaikh, T Cornford (2011) page 30

### 4.2.3 Economic Benefit for Consumer

When it comes to consumers, costs, royalties and standards, the first thing to consider is that the existence of a royalty will automatically increase the costs of all products related to the standard, decreasing the size of the standards network, thus decreasing the potential consumer benefits associated with that standard.<sup>128</sup> Hence from a strict cost aspect it would be more beneficial for consumers if the technologies in standards are not subject to royalty payments. The possibility of reducing cost is also the most important factor when migrating to open-source, at least from a policy standpoint. The most attractive feature of RF and open-source software regarding cost is the lack of royalty and licensing fees, but there are also possibilities to save money due to efficiency gains such as enhanced interoperability leading to an increased number of vendors. There is however a need to investigate how those possibilities translates in reality, and the overall picture, since there are other costs to consider besides acquisition and licensing of the software.

There are many different reasons as to why change from proprietary to open-source, but lowering costs is almost always one of them. There are also different scales of migration as we have seen and they have different impacts on costs.

In Finland, the Ministry of Justice changed their office suite from MS Office to OpenOffice when having to migrate due to a change in operative systems from Windows NT 4 to Windows XP. A decision made solely on financial grounds.<sup>129</sup> The results of the project showed that over a five year period the migration to the open-source alternative would overall cost less than half of the proprietary alternative (MS Office), even though some expenses such as staff training would be higher with OpenOffice.<sup>130</sup> The example set by the Finnish authorities demonstrates that a “smaller” size migration can be very cost effective due to only cutting licensing and maintenance costs.

So what about larger scale projects?

Well in both examples of Munich and the Swedish Police the migrations where successful in cutting costs, with Munich saving 11 million Euro on the migration alone<sup>131</sup> and the Swedish police saving 19 million Euro over the years 2006-2011, a reduction close to fifty percent in comparison to the proprietary alternative.<sup>132</sup> That could be considered quite an accomplishment when considering that Munich developed an entire system running on a Linux distribution that they themselves constructed, which was far from cheap.

---

<sup>128</sup> M MacCarthy (2009) page 12

<sup>129</sup> MINISTRY OF JUSTICE, OPERATIONS AND ADMINISTRATION 2007:2 (2007) “Migrating a Ministry to OpenOffice.org MINISTRY OF JUSTICE, FINLAND HELSINKI” page 1

<sup>130</sup> MINISTRY OF JUSTICE, OPERATIONS AND ADMINISTRATION 2007:2 (2007) page 4

<sup>131</sup> M Feilner (2013) page 15

<sup>132</sup> IDABC case study (2009) page 3

What is interesting in the cases where the migration is covering more than a single software program is that there seem to be more ways to save money with open-source than just from the more obvious acquisition, licensing and maintenance. One of the benefits that come with increased vendor independence is an increase in competition between vendors and thus lower prices, which in the long run becomes an important factor in cost reduction.<sup>133</sup> Another perhaps less obvious advantage of using open-source software is the hardware. Or rather the increased interoperability with hardware that comes with using Linux. That became an important factor both for the Swedish Police that was able to buy cheaper hardware and Munich that could continue using their old hardware, which would not have been possible if migrating to the Windows alternative.<sup>134</sup> Authorities have also been able to cut costs through increase in operational effectiveness stemming from the migration such as greater transparency and audit-ability which allows more informed decisions to be made about systems over time, indicating that using open-source can also lead to more subtle benefits that over time keep reducing cost.<sup>135</sup>

An IT migration is an expensive endeavor and even though it seems to be cheaper migrating to open-source than proprietary software due to fewer costs and higher interoperability, the fact that it is expensive does not change.<sup>136</sup> One thing that constantly seems to be more expensive with migrating to open-source is the in-house training that is needed to use the software, which is quite natural considering that education normally is needed with the use of unfamiliar software. Costs related to staff education could also be considered as investment as it raises competence within the department which when using open-source seems to be extra beneficial and helps save money over time.<sup>137</sup> This leads to the consensus among users that an open-source migration should only be done when necessary and should not be done carelessly. So from a cost perspective, the saying “if it is not broke don’t fix it” seems to be quite appropriate in this situation, implying that migrating to open-source when the migration is not necessary should not be recommended.<sup>138</sup> But when the migration is indeed needed the open-source solution seems to be the most cost efficient when appropriate. This is supported by research showing that essentially all authorities using open-source have according to their experiences reduced costs in several ways.<sup>139</sup>

Another positive economic effect that can arguably be attributed to open-source is that it can nurture and build up strength in local supplier companies and support economic growth. Since the support, maintenance and development market for open-source is accessible for anyone it provides

---

<sup>133</sup> See IDABC case study (2009) and M Shaikh, T Cornford (2011)

<sup>134</sup> M Feilner (2013) and IDABC case study (2009) page 3

<sup>135</sup> M, Shaikh, T Cornford (2011) page 29

<sup>136</sup> M, Shaikh, T Cornford (2011) pages 27, 31

<sup>137</sup> IDABC case study (2009) and M, Shaikh, T Cornford (2011)

<sup>138</sup> M, Shaikh, T Cornford (2011) page 31

<sup>139</sup> See the three examples of Munich, Swedish Police and Finnish Ministry all cut costs as well as all public administrations showcased on the OSOR website indicate that they have saved money with free and open source software and see M, Shaikh, T Cornford (2011) page 29 “most of our interviewees were clear that open source adoption does overall help reduce costs”

the opportunity for local business to play part. In Spain and Brazil for example the national software industries have according to the countries themselves flourished because of the use of open-source, creating a larger base of SMEs as a result.<sup>140</sup> Considering that the State is the consumer in public procurement, stimulating the national economy is to be seen as a consumer benefit and in this case also have a positive effect on competition in general.

## 4.2.4 Benefits vs Deficits

There seem to be some clear benefits for consumers if properly using RF and open-source software based on the research earlier presented in this chapter. For the second condition in 101(3) TFEU to be fulfilled however, these benefits must outweigh or at least nullify the negative effects that the restriction can cause the consumers, the restriction in this case being a RF requirement in Article 13.

There are many benefits to using open-source when done correctly, but at the same time it is not something easy to do and there are no indications suggesting that it would be the ideal solution for every authority or situation. Practically every authority that migrated to open-source confirms that it takes research and preparations as well as a competent IT department to be successful. There are also examples of failed or less successful open-source projects by authorities due to lack of planning or deficient competence within the departments.<sup>141</sup> Different products are also more or less suitable for open-source as a public procurement alternative, regarding server software it seems very advantageous and not especially unsafe while using open-source for desktops is considered difficult and quite unpractical since it would be very demanding for the user, which is indicated by the market share of less than two percent for open-source desktop OS.<sup>142</sup> There are also areas where proprietary software is simply better and more tailored for certain demands that need to be fulfilled by the authority using the product.<sup>143</sup> Considering this, it would be safe to assume that a RF requirement for all public procurement would not be the most effective solution. Especially considering that some municipalities and public bodies are smaller than others and cannot reasonably be expected to conduct advanced IT migrations with all the risks that it involves. A more suitable situation would be that the public procurers themselves after examining their option are freely able to make the choice that best suits their situation.

---

<sup>140</sup> M, Shaikh, T Cornford (2011) pages 30 in general and page 25 for the example of the Andalusian government in Spain

<sup>141</sup> See e.g. <https://joinup.ec.europa.eu/elibrary/case/lessons-learned-greek-open-source-project> and “One German city drops Openoffice for MS office, why Open Source still fails to impress”

<sup>142</sup> M Shaikh, T Cornford (2011) page 24 and <http://www.netmarketshare.com/operating-system-market-share.aspx?qprid=10&qpcustomd=0> for statistic of market shares on the OS market

<sup>143</sup> See D Wlodarz and M Shaikh, T Cornford (2011)

So with that in mind we need to see what the scope of Article 13 is and how it may affect the consumers. The provision states that “*the Commission may decide to identify ICT technical specifications that are not national, which may be referenced, primarily to enable interoperability, in public procurement*”.<sup>144</sup>

The objective is to identify standards that “may be referenced” to enable interoperability. So there is nothing in Article 13 forcing or limiting the choices available to the procurer. The objective rather seems to be helping procurer make choices to enable interoperability, and looking at the technical specifications that the Commission have “standardized” so far according to Article 13 the conclusion can be made that the standards are to cover more general interoperability network aspects, and not more intrusive software such as for example specifying operative systems or office suite software.<sup>145</sup>

So the question is then; how much would consumers be affected of the possible RF requirement?

There are some companies that might avoid taking part in the standardization process due to the lack of royalty incentive. That may lead to technology being left out of the standard, possibly even technology that could have been of use to the consumers using the standard when procuring. There is also the incentive to innovate question that has already been discussed in this thesis and a negative effect on innovation would also be negative for the consumer, but that works both ways so if innovation is positively affected as it seems to be, it would be beneficial to the consumer. Considering that proprietary software is almost always better known and more used among procurers than open-source alternatives, the risk of a proprietary technology not being utilized in a way that would hurt the consumer could be considered relatively limited when regarding a voluntary recommendation.

At the same time, the inclusion of a RF requirement would not automatically mean that all positive effects of RF and open-source software will be realized by the authorities. But looking at the research there clearly are several positive effects that can come from increased use of open-source software by authorities in the Member States. Open-source software however, remains underutilized because of the low level of knowledge regarding its existence and the clear advantage proprietary software has due to brand recognition and previous use. Another factor is that many responsible within the public sector rather “plays it safe” and continues with the more known products than tries something like open-source that would be considered a more risky approach.<sup>146</sup> This leads to the argument supported by researchers as well as policy makers, that there is a need for policy initiatives to level the playing field for open-source to be accessed

---

<sup>144</sup> REGULATION (EU) No 1025/2012 Article 13

<sup>145</sup> See COMMISSION IMPLEMENTING DECISION (2014/188/EU) “on the identification of ICT technical specifications eligible for referencing in public procurement”

<sup>146</sup> M Shaikh, T Cornford (2011) page 28

properly due to the advantages that proprietary software at the moment enjoys when it comes to public ICT procurement.<sup>147</sup>

What is quite clear when researching open-source projects is that even though there are several good examples to be found, the reality is that only a small percentage of public authorities in the EU are using open source, which also makes it more difficult and more hazardous for procurers to make the decision to use open-source instead of the leading proprietary product. Arguably implying that recommendations from EU provisions to use RF open-source software in standards would not create barriers for proprietary software and thus limiting the choices of the procurer but instead rendering the playing field more balanced and assisting procurers in making the choice to access open-source in situations where it might be profitable but at the same time the more difficult decision to make.

## 4.3 Third Condition

### 4.3.1 Indispensability

The third condition that needs to be met according to Article 101(3) TFEU is “*to not impose on the undertakings concerned restrictions which are not indispensable to the attainment of these objectives*”.<sup>148</sup>

Meaning in the situation at hand that the restriction of not allowing royalty based technology to be part of the standards set in accordance with Article 13 have to be essential to the fulfillment of the efficiencies and the consumer benefits earlier discussed in this thesis. What is to be seen as “indispensable” is however less clear from the wording in the article so to find the correct interpretation to that phrasing the Guidelines need to be consulted. From the Guidelines it follows that;

*“the decisive factor is whether or not the restrictive agreement and individual restrictions make it possible to perform the activity in question more efficiently than would likely have been the case in the absence of the agreement or the restriction concerned. The question is not whether in the absence of the restriction the agreement would not have been concluded,*

---

<sup>147</sup> M Shaikh, T Cornford (2011) page 31

<sup>148</sup> Article 101(3) a) Consolidated version of the Treaty on the Functioning of the European Union TFEU

*but whether more efficiencies are produced with the agreement or restriction than in the absence of the agreement or restriction”.*<sup>149</sup> So it is rather a question of if the efficiencies and positive effects would be lesser or harder to achieve without the restriction than whether the restriction is necessary to make the efficiencies possible.

As concluded earlier in this thesis there might well be several benefits in using RF and open-source software, but would a RF requirement in Article 13 be necessary to fully take advantage of those benefits?

### 4.3.2 GPL License Issue

The key aspect of this discussion concerns the different licenses used by open-source software and their compatibility with FRAND. There are around 70 different licenses recognized by the Open-source Initiative as open-source licenses.<sup>150</sup> All with different characteristics tailored to fit the needs, ideas and ideals of the creator of the license who in many cases is also the manufacturer of the software. Regarding the vast majority of these licenses such as *restrictive* and *hybrid* licenses there are generally no provisions disturbing the possible compatibility with FRAND.<sup>151</sup> When it comes to *permissive* licenses however we find some problems and this first and foremost regarding the incompatibility between FRAND and GNU General Public Licenses (GPL) who based on their core ideals and architecture are difficult to combine with royalties to say the least.

How the GPL licenses works is basically that they give rights to the user rather than protect the rights of the original IPR holder and these rights automatically follows the chain of users in cascade like fashion as to guarantee the freedoms granted to users not only of the original software but also to the users of derivative products of the original software.<sup>152</sup>

This architecture is fundamental to the objective and ideal of the GPL licenses and can clearly be seen in clause six of the GPLv2 that stipulates:

*“Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License”.*<sup>153</sup>

---

<sup>149</sup> COMMUNICATION FROM THE COMMISSION (2004/C 101/08) “Guidelines on the application of Article 81(3) of the Treaty” § 74

<sup>150</sup> For a complete list see <http://opensource.org/licenses/alphabetical>

<sup>151</sup> I Mitchell, S Mason (2011) “Compatibility Of The Licensing Of Embedded Patents With Open Source Licensing Terms”

<sup>152</sup> European Commission report “Implementing FRAND standards in Open Source: Business as usual or mission impossible? Page 4

<sup>153</sup> GNU General Public License, version 2, clause 6



That in relationship with clause two b):

*“You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.”*<sup>154</sup> Demonstrates the difficulty in combining software under GPLv2 license with any software for which royalties are to be paid and if the wording of clause two b) was not clear enough, clause seven clarifies:

*“For example, if a patent license would not permit royalty free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way that you could satisfy both it and this License would be to refrain entirely from distribution of the program.”* This provision has been given the nick-name the “liberty or death” clause since it solidifies that no restriction of the original freedoms is allowed or else the program is impossible to distribute.

The latest GPL version, the GPLv3 has similar provisions that are even more tailored to hinder interoperability with FRAND to rectify some ways found to circumvent the GPLv2 license, and states *inter alia* “To prevent this, the GPL assures that patents cannot be used to render the program non-free”.<sup>155</sup>

The GPLv2 version however is the more used of the licenses and could be deemed more important.<sup>156</sup> Another thing worth noting is that the GPL licenses have no clause related to governing law or legal jurisdiction. So the exact interpretation of the wording in these clauses might well vary depending on the court and jurisdiction in any given legal process. It must however be considered highly unlikely that any court within the EU would consider the GPL licenses compatible with royalty payments.<sup>157</sup>

So what this means is for example that if an authority implements a FRAND standard that is subject to royalty payments and already has software or code licensed under a GPL license that they want to combine with the standard, the product of that combination would not be allowed to be redistributed, since the rights of the GPL would not be passed on to the next user.<sup>158</sup>

The GPL licenses are as stated above just a few among many others open-source licenses, so does incompatibility with GPL really merit a RF requirement? Well the problem is that even though the GPL family represents a small part of the licenses they cover the majority of the open-source projects, around 60%.<sup>159</sup> The most prominent among the open-source

---

<sup>154</sup> GNU General Public License, version 2, clause 2 b)

<sup>155</sup> See preamble of GNU General Public License, version 3

<sup>156</sup> See <https://www.blackducksoftware.com/resources/data/top-20-open-source-licenses> for relevant statistic

<sup>157</sup> Iain G. Mitchell QC, Stephen Mason “Compatibility Of The Licensing Of Embedded Patents With Open Source Licensing Terms”

<sup>158</sup> See <https://www.gnu.org/copyleft/>

<sup>159</sup> I Mitchell, S Mason (2011), C Mair (2012) and <https://www.blackducksoftware.com/resources/data/top-20-open-source-licenses>

projects covered by these licenses is the Linux kernel, meaning that Linux, arguably the most important software for public procurement is incompatible with any standard that is subject to royalty payments.<sup>160</sup> In fact even a FRAND-Z (without royalties) would likely be difficult to combine with the GPLv2 because of the difference in architecture depending on how the court would interpret the license in the given case.<sup>161</sup>

Considering the quantity and importance of open-source software covered by GPL licenses the choice to include FRAND in the Horizontal Guidelines, EIF 2.0 and Article 13 constitutes a genuine problem. A problem that unfortunately seems difficult to resolve due to the fundamental incompatibility that lies in the architecture of two licensing models, with GPL licenses having a cascade effect where granting the first licensee the first license the original IPR owner does nothing further since subsequent licenses will be granted automatically. When it comes to FRAND on the other hand, the IPR owner will have to grant a new individual license to each new licensee. And to make sure that the software remains “free” the GPL requires that the patent license conforms to the GPL architecture which a royalty baring patent impossibly can do without removing the royalty.<sup>162</sup>

Because of this compatibility issue between FRAND and GPL licensed software the argument could be made, that if the objective is to utilize open-source in interoperability standards as to reap the benefits earlier stated in this thesis, then the possibility to use open-source projects covered by the GPL license cannot not be eliminated. Since these projects are incompatible with royalty bearing technology, the technology chosen as interoperability standards would have to be free of royalties to fully realize the potential benefits.

This licensing issue and the need for technology to be RF in order to be compatible with the majority of open-source software is also one of the major reasons why open-source and RF are so intertwined and in some areas of this discussion inseparable.

This clash between license forms also represents a major hindrance when it comes to interoperability, which I chose to discuss here considering the need for background information regarding the different licensing forms. The fact that the majority of open-source projects are not compatible with patents subjected to royalty payments is also raising criticism of the explicit inclusion of FRAND in EIF 2.0 with the motivation to not exclude royalties from their definition of “open”.<sup>163</sup>

The reasoning behind the choice to include both FRAND and RF in the EIF 2.0 was to enable interoperability, give incentive to innovate and to create a level playing field between proprietary and open-source software.<sup>164</sup> This

---

<sup>160</sup> Linux.com (2014) “Top 10 Best Open Source Softwares that Rocks World Wide Web”

<sup>161</sup> I Mitchell, S Mason (2011)

<sup>162</sup> I Mitchell, S Mason (2011)

<sup>163</sup> ECIS (2010)

<sup>164</sup> See EIF version 2.0

might seem reasonable at first glance since a level playing field should mean that as many different software as possible are eligible as options for the standard, but how does the inclusion of FRAND translate in reality?

The inclusion of patents subject to royalty payments excludes interoperability with most open-source software and therefore the argument has been made that the very inclusion of FRAND in EIF 2.0 has a negative impact first of all on interoperability but also on open-source projects covered by the GPL licenses who consequently are put in a disadvantageous position and thus rendering the playing field uneven. The EIF is not legally binding and can therefore not be legally enforced, but is however a communication with the force of the Commission behind it and as such it carries a lot of weight within the EU, and rightfully so. So proclaiming that FRAND is the best way to create interoperability could possibly be damaging not only to open-source and interoperability but to competition as well.<sup>165</sup>

To the contrary of the views presented in EIF 2.0, there is a commonly shared perception that if open-source is to become an accepted and substantial part of information systems activity within the public sector which would be necessary for realizing the efficiencies earlier discussed. Then there is a need for government-level policies to sustain the change including an overhaul of procurement processes and practices. Most see this as an essential leveling of the playing field, hence the same objective as in EIF 2.0 but with almost the opposite method.<sup>166</sup> Several authorities using open-source as well as policy makers are of the opinion that to create a situation where it would be as easy for an authority to procure open-source as proprietary software policies need to benefit open-source because it is the more difficult choice to make as it currently stands.

The lack of other authorities using open-source has been one of the biggest problems in successfully migrating to open-source in many cases, and has even forced authorities to go back on their own open-source projects despite having the official support of the government.<sup>167</sup> These difficulties were experienced by the Municipality of Munich as well as the Swedish Police that both expressed described the lack of other similar projects that they could look to for guidance as one of the biggest obstacles in the realization of open-source projects.<sup>168</sup> This implies that if it were easier to access open-source then more authorities would use it which consequently would make it easier for other authorities to follow suite, while simultaneously increasing the positive network effects making it more beneficial for new and former users alike. One and arguably the best way in realizing this facilitation would be through policy changes, such as mandating technology to be RF if to be included in interoperability standards.

---

<sup>165</sup> I Mitchell, S Mason (2011)

<sup>166</sup> M Shaikh, T Cornford (2011) page 31

<sup>167</sup> See <http://www.computerweekly.com/news/1280093861/Microsoft-lock-in-stalls-Bristol-councils-open-source-strategy>

<sup>168</sup> See M Feilner (2013), IDABC case study (2009) and M Shaikh, T Cornford (2011)

When considering the need for positive reinforcement from policies in order to maximize the efficiencies described in earlier chapters, including a RF requirement in Article 13 would make a lot of sense. The inclusion of FRAND could on the other hand be seen as less favorable to the majority of open-source projects, putting them at a disadvantage and thus making the potential benefits described of open-source substantially more difficult to realize.

### 4.3.3 Efficiency of the Standard

For the potential benefits to be realized, the standards themselves have to be utilized effectively and as broadly as possible. Therefore the standards accepted according to Article 13 should preferably be as applicable as possible for the national or local procurers. The aspirations of EU standardization is that *“It should become possible to use these standards in public procurement or to facilitate policy making and legislation”*,<sup>169</sup> so choosing technology for the standard that everyone in the Union can use for procurement with as few problems as possible should be a priority when setting standards in accordance with Article 13.

Several Member States have after research found RF and open-source software beneficial as well as underused.<sup>170</sup> Because of the apparent need for government initiatives to facilitate an increased utilization of open-source, several States have adopted procurement policies to do so. This has been differently in various Member States. Some policies states that open-source must always be looked at and considered as an option, others include a clear preference for open-source when of equal or of higher quality than proprietary options.<sup>171</sup> Some are stricter in their preference; the Italian “Codice dell’amministrazione digitale” even states that;

*Only where a comparative assessment of technical and economic sort has been made, that according to the criteria referred to in paragraph 1-bis justifiably proves the impossibility to access solutions already available within the public administration, or free software or open-source codes adapted to the needs of the situation, is the acquisition of proprietary computer programs allowed.*<sup>172</sup> Constituting one of the clearest pro free software policies in national legislation.

It is interesting to see the motivation behind the different national policies, where the reasoning behind the Italian law seem mostly financial, other ones such as the Swedish and Dutch seem to be more driven by the technological

---

<sup>169</sup> COMMUNICATION FROM THE COMMISSION, “A strategic vision for European standards” § 1

<sup>170</sup> See UK Cabinet Office (2012) “Open Source Software Options for Government” version 2.0

<sup>171</sup> See Ministry of Economic Affairs (2007) (Holland), P Brownell (2012) “France government is latest to fully embrace open source” (France), Statens offentliga utredningar SOU 2009:86 (Sweden), T Undheim (2011) “Portugal’s new interoperability law” (Portugal)

<sup>172</sup> Linee guida per la valutazione comparativa prevista dall’art. 68 del D.Lgs. 7 marzo 2005, n. 82 “Codice dell’Amministrazione digitale” I-TER

advantages, such as to reduce lock-in and increase interoperability and innovation. So essentially all efficiencies discussed in this thesis has been recognized by different policy makers in the Member States.

The national policies adopted to facilitate the use of free or open-source software shows a clear trend in ICT procurement from the Member States nationally, which could create a problem in relation to Union ICT standards to the extent that they demand the payment of royalties. This conclusion can be drawn from the earlier discussion regarding the license issue between GPL and royalty payments.

As seen above, if standards recommended in accordance with Article 13 would include technology that are subject to royalty payments they would not be compatible with the majority of open-source projects which by itself is a significant problem. But considering the national policies of the Member States there is also a problem related to the compatibility between the different policies since an authority procuring IT under a national policy that prioritizes free software will most likely to some extent use software covered by GPL licenses. They would therefore not be able to combine the code or software that they are using with the standard. Having standards that are not free of royalties would also as in cases of the Italian “Codice digitale” mean that procurers are not allowed to use the standard unless impossible to use other prioritized alternatives, and would render such a standard difficult if not impossible to implement in these situations. Even in cases with less strict national policy, a standard subjected to patent royalties would be very difficult to combine with the policies encouraging the use of RF and/or open-source software. That would likely cause the standard to be less utilized by the member state as well as rendering the procurement situation in the Member State more complicated since national and Union policies would not be compatible. This would consequently create a result opposing the objective of Article 13, to facilitate the use of interoperability standards in the Union, since there would be less uniformity in the procurement of interoperability software. Based on this discussion it seems plausible that the objective of Article 13 could only truly be realized by avoiding the use of patent royalties in interoperability standards to make sure as many as possible can make use of the standard.

It can also be argued that in the context of realizing the potential benefits of open-source and advocating the efficiency of Article 13 as have been done in this chapter, the RF requirement itself would not be necessary as long as no royalty bearing technology was to be included in the actual standards. That argument is correct to the extent that if the inclusion of FRAND would be based on political objectives rather than interoperable<sup>173</sup> and no such technologies were to be included *de facto*, as have been the case thus far.<sup>174</sup> Then the inclusion a RF requirement would not make a direct difference as to the realization of the efficiencies, even though it might have an impact

---

<sup>173</sup> Which have been argued by the ECIS and FSFE in H Roy, K Gerloff (2010)

<sup>174</sup> See COMMISSION IMPLEMENTING DECISION of 3 April 2014 “on the identification of ICT technical specifications eligible for referencing in public procurement”

through the promotion of RF standards. This might very well be the case, but this discussion is as much about comparing RF and FRAND as the possible effects of a RF requirement.

## 4.4 Fourth Condition

### 4.4.1 Elimination of Competition

The fourth and last condition that has to be fulfilled according to Article 101(3) TFEU is that the restriction cannot “*afford undertaking the possibility of eliminating competition in respect of a substantial part or the products in question*”.<sup>175</sup>

When it comes to recommended standards of the kind that are to be chosen in accordance with Article 13 it would be difficult to recognize any risk of *elimination* even though some stakeholders might find it less interesting to participate. Just as regarding the other conditions there is a need for explanation outside the words of the treaty for which the Guidelines are to be consulted. The Guidelines states that the protection of rivalry and the competitive process takes priority over potential efficiency gains, based on rival competition being an essential driving force that stimulates economy and innovation, and a potential elimination of competition would even when bringing short term efficiencies might well have a negative effect on the market in the long run.<sup>176</sup> Especially when an agreement, or in this case a provision is creating or aiding a dominant position is it to be considered as having a negative impact on rival competition.

The risk that a RF requirement in Article 13 would lead to elimination of competitors on the market must be considered as minimal for a number of reasons, which however does not signify that such a requirement would be without effect on rival competition. Since the maintenance of rival competition is pursued in Articles 101 and 102 TFEU it should also be considered important when comparing different IP approaches from a competition perspective.<sup>177</sup>

---

<sup>175</sup> Article 101(3) a) Consolidated version of the Treaty on the Functioning of the European Union TFEU

<sup>176</sup> COMMUNICATION FROM THE COMMISSION (2004/C 101/08) “Guidelines on the application of Article 81(3) of the Treaty” § 105

<sup>177</sup> COMMUNICATION FROM THE COMMISSION (2004/C 101/08) “Guidelines on the application of Article 81(3) of the Treaty” § 106

The first thing discussed in this chapter will be to what extent competitors would avoid participating in the standardization process because of an RF requirement, and if such a requirement would have negative implications on rival competition at all. Then a more general discussion about the effects on rival competition that RF and proprietary software might have will follow. The latter discussion will in large deal with dominant positions on the market and the complication therein since the dominance issue is particularly important in regards to the software market and prioritized in the Guidelines.

#### **4.4.2 Negative Effects of RF Requirement**

The inclusion of a RF requirement have different effects on different competitors, more positive for some than others, but does that really mean that there is a negative effect on rival competition? The main problem discussed on this subject is if many stakeholders would avoid participation in the standardization process when no royalty incentive.

At first glance it might seem as though all proprietary companies holding valuable patents would avoid participation in setting a standard for which no royalties can be paid, because of the lack of financial incentives. When looking closer this however becomes a more nuanced issue and while some proprietary companies might chose to avoid participation, there are many others who would not. This due to the potential benefits of having one's technology read on to a RF standard differs for different types of proprietary companies, perhaps even more so than between some proprietary and open-source companies.

In the area of software standardization it is important to recognize that there are a great number of ways to make money around a standard that includes one's technology even without the possibility to profit from patent licensing, because of the network effects that benefits the technology.<sup>178</sup> But this is depending on what kind of company it is concerning.

When identifying companies that partake in standardization processes there are basically three different types. Pure IP companies, vertically integrated companies and pure downstream companies.<sup>179</sup> The pure IP companies don't take part in manufacturing and only produce IP to make licensing revenue from other companies that uses the IP. Vertically integrated companies produce IP through R&D as well as manufacture products with the IP that they have developed; Microsoft, Apple, IBM etc. are such companies. The pure downstream companies does not produce IP at all (at least for the standard in this example) but uses the standard to manufacture

---

<sup>178</sup> M Glader (2010) page 645

<sup>179</sup> See generally D Geradin (2008) "What's Wrong with Royalties in High-Technology Industries?"

the final product and thus making use of the IP from either the pure IP company, the vertically integrated company or both.<sup>180</sup>

The pure downstream company stands only to gain from the standard being RF since their incentive would be to lower manufacturing costs through avoiding licensing fees, which would make them more efficient and competitive on the market. This is of course only accurate if the quality of the technology used would be as good as the competing.<sup>181</sup>

When it comes to vertically integrated companies they can profit in different ways from having their technology included in a standard. The first one would be to make money from licensing the patents to the users of the standard, which of course would not be the case if the standard mandated technology to be RF. However, there are other ways for this type of company to make money when having their technology included in a standard. As stated earlier, one of the benefits of RF is the fast adoption rates and the quickness of the implementation, that signifies a head start on competing technology included in royalty bearing standards. Another benefit is that on the downstream market, a standard without royalties will always be preferred among the implementer because of its economic benefits and therefor increase its market share in relation to standards who are not RF. For a vertically integrated company who is active on that downstream market getting their technology included in a standard would mean that they could expect their market share to increase due to first-mover advantages and the natural monopoly characteristics and network effects often associated with standards. As the company developing the technology they would not only be first and with all likelihood the most effective at using the standard, but also the most qualified to produce services and products around the standard, such as support, add on features and upgrades, from which profits can be made.<sup>182</sup> Since these network effects are so important in the software industry it has been argued that;

*“having even a slight advantage or head start, such as having your technology rather than a competitor’s included in a new standard, can greatly outweigh any royalties that might have been obtained under the old regime. Companies are therefore quite happy to compete to get their technology included for free.”<sup>183</sup>*

This does not mean that vertically integrated companies would prefer RF to FRAND, quite the opposite since in case of RF they would lose the licensing revenue. There also seem to be less incentive for companies with larger patent portfolios to participate than those with fewer patents, which might be why most SSOs still use FRAND instead of RF as the license of choice. But as voiced by Trond Undheim, director of Standards Strategy and Policy at the Oracle Corporation;

---

<sup>180</sup> C Mair (2012) page 11

<sup>181</sup> C Mair (2012) page 12

<sup>182</sup> C Mair (2012) pages 11-12

<sup>183</sup> A Updergrove (2011) “Do Royalty-Free Standards “Stifle Innovation?”



*“The interesting thing is that, notwithstanding the fact that the overwhelming number of ICT standards are still created in standards development organizations that allow royalties to be charged, very few standards are ever released that do, in fact, require the payment of royalties—even though those that have developed them often do own patents that would be “necessarily infringed” by a product built to their standards”.*<sup>184</sup>

This implies that even though many market players don’t want a RF requirement, they neither want standards including patent royalties. This might seem contradictory which in a way is true, but companies prefer standards to be free to implement as long as they themselves don’t own the patented technology meaning that it would be hard to find consensus among a large group of stakeholders to include technology subject to royalty payment in an interoperability software standard.<sup>185</sup>

The fact that the majority of the standards chosen are without royalties is something relatively unique for the IT sector, and is not at all prolific in other markets such as telecom.<sup>186</sup> So why is it so? Well first of all the question to consider is what is being standardized. When it comes to standardization of software the key factors are interoperability at the network layer, and these kinds of standards even though essential to interoperability, involves a relatively low level of technical innovation, at least in comparison with markets with costly needs for R&D, testing and manufacturing of hardware.<sup>187</sup> These network effects that are the key to software standardization would suggest that direct compensation from licensing fees may well be considered by many stakeholders as less lucrative than the possible upsides to the network effects that would come from a wide implementation in the downstream market of a RF standard that includes their technology.<sup>188</sup>

The suggestion that vertically integrated companies would not be opposed to participating in the setting of RF standards is also supported by the ease with which the W3C organization has attracted members.<sup>189</sup> That in combination with the fact that several members threatened to leave the same organization if they were to include the use of FRAND would suggest that when it comes to software interoperability standards, RF might well be a more effective solution than FRAND in attracting participants.<sup>190</sup>

When it comes to pure IP companies however, the situation differs. For example, since a pure IP company is not active on downstream markets, advantages with having your technology as standard would not be more effective or lucrative as to other markets around the standard. Network effects would also not be seen as attractive benefits for such a company.

---

<sup>184</sup> T Undheim (2011)

<sup>185</sup> T Simcoe (2005) page 3

<sup>186</sup> M Glader (2010) page 642

<sup>187</sup> M Glader (2010) page 644

<sup>188</sup> C Mair (2012) page 14

<sup>189</sup> See <http://www.w3.org/Consortium/Member/List> for the full list of W3C members

<sup>190</sup> D Weitzner (2004)

Hence, a RF requirement would with all likelihood mean that pure IP companies would not want to participate in the standardization process of such a standard.<sup>191</sup> The exclusion of these companies would affect rival competition in some ways, but there are several factors to consider. First of all, these companies are less occupied with R&D and manufacturing of their own products, so they are not to be considered as especially innovative and are not making new products available to the consumers. This is critical regarding competition, since if these suggestions are correct and mainly pure IP companies would refrain from the standardization process then a RF requirement would not really have a negative effect on innovation, which is one of the strongest arguments against using RF standards. This argument is discussed here because of the need for background explanation regarding the different companies and their incentives but is also valid concerning innovation as efficiency.

The mere fact that some companies would not have incentive to participate does not mean that the process is anti-competitive, especially since all companies would be allowed to participate if they so please. The same effect from a FRAND approach such as with W3C would hardly be considered anti-competitive even though it made some companies less likely to participate.

The RF approach does not seem to prevent participation in the standardization process or innovation regarding software interoperability standards. Instead it can actually increase participation and play an essential part in promoting innovation on the software interoperability market.<sup>192</sup>

### 4.4.3 Abuse of Dominant Position

From the perspective of European Competition Law and software, abuse of dominant position have been the biggest issue, and the effects of dominant positions have been a major source of problems for public procurers of IT since it is often the cause of lock-in and vendor dependence. This discussion on dominance and abuse will be held in the light of free and open software in comparison with proprietary software as well as RF and FRAND licensing.

When it comes to abuse of dominant position in the European Union the software cases have been the most prolific ones, with both of the biggest fines given by the Commission going to the software titans Intel and Microsoft. That could be seen as an indication of the status of the software market, with some very dominant players on important product markets. The biggest fine of around 1 billion euro was given to *Intel* for offering loyalty rebates with the purpose to foreclose on the only other significant

---

<sup>191</sup> C Mair (2012) pages 11-12

<sup>192</sup> M Glader (2010) page 645

player on the market AMD.<sup>193</sup> The second biggest fine, and the biggest at the time was given in the *Microsoft case* from 2004-2007, where the Commission penalized Microsoft for abusing a dominant position held on the desktop to influence other product markets. Among the illicit practices in the case were *inter alia* “bundling” by including their own media player in Windows as to give their own product an advantage on the media player market even though competing media players were considered to be of higher quality.<sup>194</sup>

The most interesting aspect of the abuse in the *Microsoft Case* in regards to the discussion at hand was that Microsoft were found to have prevented interoperability between their operating system and the software of other companies to render their own software easier to use and thus increasingly utilized by consumers. In hindering interoperability Microsoft was considered to abuse their dominant position and thus infringing European competition law. This is of course interesting in and of itself, but what could be considered even more interesting is the decision by the Commission that along with the fine Microsoft had to pay, they had to offer up the information necessary for competing network software to fully interact with the Windows desktop and servers, this information included the source code of their software.<sup>195</sup> The Commission’s decision thus implies that hindering interoperability is negative for rival competition as well as standing against European competition law at least when done by a dominant player who uses that dominance to influence other product markets. It also demonstrates that the Commission considers offering up the source code to competitors as a way to enhance interoperability and positively influence competition. When discussing the competition advantages and disadvantages between open-source and proprietary software this is interesting to say the least since the punishment for preventing interoperability and abuse of dominant position is in this case to offer to competitors what all open-source software already offers by default, full interoperability information. The case was not without individual circumstances and the position of the Commission was based on the abuse of dominance on one product market to create an advantage on another, and is therefore not saying that proprietary software is negative and open-source is positive for competition across the board but it is however an indication that serves as an initiation for a comparison between proprietary and open-source or free software.<sup>196</sup> An open-source company could not *inter alia* deny access to source code as to exclude competitors, which was the situation in the *Microsoft Case*.

The different product markets in the software industry are often dominated by monopolies, oligopolies and *de facto* standards due to the importance of network effects in those markets.<sup>197</sup> More often than not is it Microsoft that

---

<sup>193</sup>EUROPEAN COMMISSION Press Release (2009) “Antitrust: Commission imposes fine of €1.06 on Intel for abuse of dominant position; orders Intel to cease illegal practices”

<sup>194</sup>Case T-201/04 “Microsoft v Commission” §§ 1088-1090

<sup>195</sup> See generally Case T-201/04 “Microsoft v Commission”

<sup>196</sup> See generally Case T-201/04 Microsoft v Commission

<sup>197</sup> J-M Dalle (2001) page 3

enjoys the dominant position in these situations.<sup>198</sup> But does that have to be negative?

Because of the need for interoperability on markets like “operating systems”, “office suites” and “e-mail platforms” the existence of a dominant product can lead to positive effects due to enhanced interoperability between the users so long as they use the same software, and as long as the dominant product is superior to competing products as have often been the case regarding Microsoft products like “Windows” and “Office” it leads to a natural monopoly.<sup>199</sup> The problem however, is that a solidified dominant position that forecloses on competitors due to that dominance will impede the market for which the consumers will have to pay the price through higher costs, lock-in and vendor dependence. Microsoft has as stated above been considered abusing their dominant position on the operating system market, and have been fined on several occasions by the Commission.<sup>200</sup> This does not mean that Microsoft is actively trying to give themselves unfair advantages, but with great market power come great responsibility.

Negative effects can also arise from dominance without it being the result of abuse from the dominant player. When there is a dominant software with many users the network effects by themselves can become barriers to market entry and prevent “better” products to develop and get market shares since the network effects are often more important than the quality of the software. The needs for network effects can then create situations of lock-in and vendor dependence due to lack of interoperability. This is as stated earlier one of the main issues in public procurement.<sup>201</sup>

Abusive or not, there are some clear problems when a company or product is dominant, but would that also be the case if the dominant product was “free”?<sup>202</sup>

When a monopoly or dominant position arises on the software interoperability market as often is the case in standardization, the software enjoying that position might include technology with IPR attached to them that belong to an important market player. These rights can then be exploited to impede competition by disadvantaging competitors as was done in the *Microsoft Case*. The risk of this happening is greater in regards to *de facto* standards but is not limited thereto and it has been suggested that<sup>203</sup> “Sponsors of *de jure* and consortia standards also gain advantage from attracting adopters and creating lock-in, if such standards are encumbered by private patent claims, as are standards such as W-CDMA, MPEG-4 and DVD”.<sup>204</sup> The use of FRAND when setting these standards have the objective of eliminating such risks, but due to the vagueness of FRAND

---

<sup>198</sup> C Mair (2012) page 9

<sup>199</sup> “Ethics of a Software Monopoly” available at [http://cs.stanford.edu/people/eroberts/cs201/projects/corporate-monopolies/benefits\\_ethics.html](http://cs.stanford.edu/people/eroberts/cs201/projects/corporate-monopolies/benefits_ethics.html)

<sup>200</sup> See Commission decisions against Intel and Microsoft

<sup>201</sup> R.A. Ghosh (2005) page 5

<sup>202</sup> “Free” as in free from constraints on usage and royalties payments

<sup>203</sup> R.A Ghosh (2005) page 6

<sup>204</sup> J West (2004) “What are Open Standards? Implications for Adoption, Competition and Policy”.

there is no guarantee that it would that desired effect.<sup>205</sup> On the other hand, having “free” or open-source software without royalties in a monopoly situation either *de facto* or *de jure* creates entirely different circumstances.

When a monopoly arises either naturally(*de facto*) or through official standardization (*de jure*) in which the technology is free to implement to all without royalties or restriction on usage, as with open-source software the monopoly is accompanied by full competition on all other markets where products and services are based on that technology, with no advantages or possibilities to foreclose on competitors for the original IP owner since there is no way to block or limit the usage of the standard or interoperability with the technology.<sup>206</sup> This is the consequence of the technology being free to implement with full and equal access to all possible implementers, and as such the standard would then be available to all actors on the original and other markets where the standard can be relevant on terms not less beneficial than that of the original IP user and thus removing the possibility for abuse of dominant positions, creation of barriers to entry and vendor lock-in.<sup>207</sup>

Even if it were possible to abuse a monopoly situation by making the dominant product incompatible with competing products that would not be in the best interest of an open-source company. As earlier stated, research have found that it would be more profitable for open-source software to be compatible with competing products even when dominant on the market due to the significant benefits from network effects, where the opposite was proven to be the case for proprietary software<sup>208</sup> which might also have been indicated by the Commission’s decisions against proprietary software companies. This is not signifying that other illicit actions such as bundling etc. could not be committed by an open-source company in a dominant position any less than a proprietary one.

So if software interoperability standards are adopted without royalties or other constraints based on IPRs that might prevent implementation, it would allow all potential suppliers of products and services based on the standard to use it without giving a competitive advantage to any individual supplier and thus having the most positive impact on rival competition. Such standards could be considered more open and accessible with natural monopolies regarding the technology itself but with full competition regarding products and services around it.<sup>209</sup>

This openness brings with it positive effects when it comes to avoiding lock-in and vendor dependence as stated earlier in this thesis. Research from competition authorities, government, as well as authorities using such technologies have all reported positive results in reducing these problems.<sup>210</sup>

---

<sup>205</sup> M MacCarthy (2009) 10-11

<sup>206</sup> R.A Ghosh (2005) page 7

<sup>207</sup> R.A Ghosh (2005) page 8

<sup>208</sup> See J-M Dalle (2001) and K Cheng, Y Liu, Tang (2011)

<sup>209</sup> R.A Ghosh (2005) page 8

<sup>210</sup> See *inter alia* R. Wessman, (E-procurement- lock in effects and possibilities)” policies from supra notes 130,131 and M Shaikh, T Cornford (2011)

This has already been discussed in context such as “interoperability” and “consumer benefits” while here the focus is on the rival competition, where the effect of lock-in and vendor dependence is similar for competitors as for consumers. If an authority or other consumer is locked into a certain software or manufacturer that consequently means that they as costumers are not available to competing software, resulting in a lock-out effect from the market for those competitors. So the positive effects that come from using open-source software in regards to lock-in and reduction of vendor dependence have the same positive effect on rival competition as on the consumer market, since these outcomes are linked together, and thus having a positive impact on the market in general.

Based on these beneficial properties of free software in combination with the monopolistic nature of the software markets, where the more common situation is that proprietary software not subject to free implementation is dominant with open-source software as the biggest and sometimes only competition,<sup>211</sup> it has been suggested that public policy in favor of open-source can be an effective tool in restoring rival competition on monopolistic or semi-monopolistic markets.<sup>212</sup> This opinion is shared by the former European Competition Commissioner Neelie Kroes who was responsible in overseeing the *Microsoft case* and has stated that;

*”Public and private procurers of technology should be smart and build their systems as much as possible on standards that everybody can use and implement without constraints: this is good for the bottom-line because it promotes competition between suppliers and prevents vendor lock-in”.*<sup>213</sup>

Because of the easy and free access for all to implement a *de facto* or *de jure* standard based on RF open-source software there seems to be reasoning behind the suggestion that a RF requirement would have a positive impact on rival competition in regards to dominant positions and monopoly markets.

#### **4.4.4 Other Effects of FRAND and RF on Rival Competition**

The objective of FRAND is to facilitate the standardization process and reduce the risk of abuse from IPR owners and thus enhance rival competition within the industry. The problem however is that committing to FRAND is basically a commitment to commit without that really meaning something concrete in a given case. This is because there is no definition or industry understanding of what “reasonable” or “non-discriminatory” actually means when applied in reality even though the understanding of the

---

<sup>211</sup> C Mair (2012) page 9 and R.A Ghosh (2005) page 9

<sup>212</sup> J-M Dalle (2001) page 3

<sup>213</sup> Quote N Kroes (2010) from speech ”How to get more interoperability in Europe”

terms in general is less problematic.<sup>214</sup> What can be expected from the FRAND approach is that it will prevent IPR owners from charging higher royalties from one licensee than another or determine who can license or not, which would be very much restrictive to competition. The cost of licensing however is very unclear and there is nothing concrete that prevents a FRAND standard from being too expensive for some to implement.<sup>215</sup> What is reasonable to some might not be reasonable to others, meaning that smaller companies such as SMEs and open-source companies that generally have a stricter budget in many cases would not be able to use the standard since royalty payments by itself would constitute barriers to entry.<sup>216</sup> This would then have a negative impact on the rival competition around the standard since all potential implementers would not have access.

On the contrary to the FRAND situation, when all technology included in the standard are mandatory available on RF basis there is no problem with vagueness in the interpretation, since it is clear to all licensees and licensors that no money can be made from licensing and the implementation will be free for all. Instead of creating barriers to entry that would provide more openness in the process and increase access to the standard which would create the widest economic benefit for competition within the standard.<sup>217</sup> By making the technology in the standard free to use without royalties it would also lower the manufacturing cost of the products associated with the standard making them more available to consumers<sup>218</sup>, and to “*Standardize on proprietary technology when non-proprietary alternatives are just as good, and you will raise costs for the industry as a whole*”<sup>219</sup> implying that using RF standards would improve economic conditions across the board.

It would be especially beneficial for consumers and SMEs, two important groups with the welfare of consumers as the core of European Competition Law and SMEs being necessary for a competitive IT market as well as being an expressed priority in the Regulation.<sup>220</sup> These two groups are also generally the ones who have the smallest voice in standardization, so to benefit them would be to benefit competition.

There has been some critique against open-source regarding rival competition in that if everyone uses or can use the same code, then consumers cannot recognize different software from one another, hence limiting the distinction between the competitors and thus limiting competition in a cartel like fashion.<sup>221</sup> That hypothesis could in a way be considered accurate since on most product markets the competitors have their own more or less unique product and if they are too similar it would hamper choice and competition. On the software interoperability market that is true as well, but the purpose of the products themselves are different than

---

<sup>214</sup> M MacCarthy (2009) page 11

<sup>215</sup> M MacCarthy (2009) and R.A Ghosh (2005)

<sup>216</sup> R.A Ghosh (2005)

<sup>217</sup> M MacCarthy (2009) page 12

<sup>218</sup> M MacCarthy (2009) page 12

<sup>219</sup> N Kroes (2009) in “Setting the Standards High”

<sup>220</sup> REGULATION (EU) No 1025/2012 § 21

<sup>221</sup> Opinion of S von Engelhardt expressed in “Open versus closed source: a delicate balance”

on most markets because of the need for interoperability and network effects that are quite unique to the software market. That is why in the software industry compatibility competition has a higher value than incompatibility competition, which would likely lead to standard wars and an increased risk for lock-in and vendor dependence.<sup>222</sup> Especially from the perspective of public procurement where the procuring authorities have a need for products that work together and very little need for clear differences between products.

---

<sup>222</sup> M MacCarthy (2009) page 13



# 5 Conclusion and Analysis

## 5.1 Conclusions

This thesis and its investigation have so far examined what is legally required to balance the positive and negative aspects of a restriction from a European Competition Law perspective and the effects that the use of RF technology has, both within and outside of the standardization context. The question that is to be answered is then; whether or not a RF requirement in Article 13 of the Regulation would fulfill all four of the cumulative conditions in 101(3) TFEU and thus be considered as pro-competitive?

Based on the information found in the research regarding the technological and financial aspects of the utilization of RF technology in ICT standards and how they meet with the legal requirements found in EU law and Case Law the conclusion made is that such a requirement fulfills all the conditions and most likely should be considered as pro-competitive according to European Competition Law.

### 5.1.1 First Condition

Regarding the first conditions “creating efficiencies” it follows from the Guidelines that objective “qualitative” and/or “cost” efficiencies have to be produced. From the same Guidelines and the case law it follows that enabling innovation and making new products available are considered as such qualitative efficiencies, and the creation of interoperability have been considered a strong efficiency by the Commission in the past. The promotion of these two qualities is also the objectives of the Regulation and the creation and/or facilitation of interoperability is the very scope of Article 13.

When examining the effect that RF technology and standards have had in regards to these efficiencies the results have been positive. RF interoperability standards have clearly been a key factor in the innovative and interoperable developments of the Internet as well as the Web. The first being the Digital Agendas positive example for interoperability and the Web being an interoperable phenomenon as well as one of the best example for innovative platforms that has functioned as a hub within which some of the biggest and most innovative companies in the world has been fostered. The fact that technologies such as Linux and other open-source projects are intertwined with RF technology in their general philosophy and their licensing approaches further signifies that the innovative progress that has been made in the software market thanks to these companies and

movements can to a large extent be contributed to RF technology and standards, and all the new products stemming from this such as Android OS etc. would significantly less likely exist if the technology it was built on required royalty payments for implementation.

The negative effect that RF is said to have on innovation does not seem to have a significant impact on the software interoperability industry. This is visible from the number of participants in W3C and EITF, the latter of which even though not having a RF policy still very rarely chooses standards with for which royalties actually have to be paid, and the members clearly does not protest. This is supported by the fact that very few ICT standards for which royalty payments have to be made actually becomes selected and implemented regardless of the organizations licensing approach. This investigation have also found that the companies avoiding RF standardization is essentially limited to pure upstream companies that are less innovative and does not produce new products for the consumers. Because of the benefits in having one's own technology in standards, RF or not, very few innovative companies will choose to not partake in the standardization. So the conclusion can be drawn that RF ICT especially through the Internet, the Web and the open-source movement produces efficiencies in regards to innovation, any significant drawback.

When it comes to interoperability the mere fact that the standard would be free of royalty payments would make it more interoperable since fewer constrictions means easier and wider implementation. Regarding openness, which the consensus agrees is a key factor in the creation of interoperability, a standard should be consider more open the fewer constrains there are in using that standard, seeing it in another way would not be in the interest of interoperability. The basis for interoperability standards is to be implemented as widely as possible in order to gain network effects, and for that the interoperability standards should be implementable without royalty payments so to enable the widest possible implementation since the existence of royalties might constitute a hindrance in such an implementation.

The fact that royalty bearing standards are incompatible with software covered by GPL licenses such as Linux, signifying that the use of royalties in the standard would prevent interoperability with some of the most important software available, and based on the results from authorities using Linux, arguably the most beneficial. This reasoning is supported not only by the producers of RF technology, but also by important patent holders in the ICT industry and Competition authorities both from Member States and the EU. So on the theoretical level, using RF technology increases interoperability, and based on the reports from authorities who uses RF open-source technology the conclusion can be made that it has the same effect in practice.

The clear majority of authorities that migrated to open-source software experienced increased vendor independence and reduced lock-in, which

both stems from increased interoperability. This leads to the conclusion that RF technology clearly produces interoperability efficiencies that benefits the consumers.

There seems to be a clear correlation between the demands on “efficiencies” in the Guidelines and case law and the efficiencies produced by RF technology which implies that those demands are fulfilled, since the efficiencies are objective and not purely beneficial to the manufacturers of RF software. The Commission’s reasoning in the X/Open where enabling interoperability and innovation in a similar fashion clearly was considered as efficiencies would also suggest that the efficiencies at hand would be considered as valid and in accordance with European Competition Law and the scope of the Regulation and Article 13.

### **5.1.2 Second Condition**

When it comes to the second condition “fair share for the consumers” the focus is on public procurers since public procurement is the scope of Article 13. The consumer advantages produced was primarily cost reduction through avoiding royalty and licensing expenditures and increased interoperability which had both economic and technological advantages. Increased innovation and the availability of new products are also to the benefit of the consumer but in a more abstract fashion so the focus on this part of the examination was the benefits more directly measurable.

The mere fact that the technology is free from royalties and licensing fees produces cost efficiencies for the consumer, whether that consumer is a manufacturer of a product based on the standard or a public procurer trying to save tax-payer money. Essentially all authorities who migrated to RF software have successfully reduced costs by avoiding these expenditures and the increased interoperability have also constituted an important factor in cutting costs for authorities through vendor independence. Research has thus shown that using RF technology has benefited costumers in creating cost as well as quality efficiencies in several ways, since the statistic clearly demonstrates a positive impact on vendor lock-in and increased option in vendors for procurers using RF technology.

These consumer benefits must however according to Competition Law outweigh any potential negative impact that the restriction may cause the consumers. The potential negative effect is that the standard would be sub-par because stakeholders would choose to leave their technology out of the standardization process due to a lack of royalty incentive. If what was found regarding rival competition in this thesis is accurate and only upstream companies would avoid a RF standardization process, a theory supported by the number of different stakeholders in W3C and the fact that very few ICT standards includes royalty bearing technology. In combination with the voices of ICT procurers stating that royalty bearing proprietary software is

almost regularly more recognizable to the ICT procurers and the easier choice to make, there would not seem to be a concrete risk at hand for the inclusion of a RF requirement resulting in procurers missing out on key technology and thus causing a negative effect for the consumer. The risk of this happening could not be considered as zero, but could surely not be considered substantial to the extent that such a risk would be greater than the potential benefits that ICT procurers have when properly utilizing RF and open-source software.

Considering the relatively meager demands in the Guidelines, that the positive effects for the consumers only has to cancel out the negative, and the reasoning in X/Open where arguably less consumer benefits, only increased interoperability and availability of new products were considered as clearly beneficial to the consumers even though the restriction in that case was stricter. It clearly seems as though the consumer should be considered to receive their “fair share” and thus fulfilling the second condition of Article 101(3) TFEU. Especially considering that there are more positive factors for the consumers in this situation than in X/Open, including reduction of lock-in which is one of the key aspects of ICT standardization as well significant cost reduction advantages.

So thus far the conclusion is that based on the investigation in this thesis, the two positive conditions in Article 101(3) TFEU would be fulfilled by a RF requirement through the production of efficiencies for which the consumers receive their “fair share”.

### **5.1.3 Third Condition**

As to the third condition and the first of the two negative ones “indispensability of the restriction” it follows the Guidelines and case law that the efficiencies have to be less likely to be realized without the restriction and not impossible to realize without the restriction. This is demonstrated in the X/Open case where the Commission found that the condition was fulfilled since the group would be less efficient without the restriction which consequently would make the realization of efficiencies more difficult.

Software registered under a GPL license, which is the majority of open-source projects are incompatible with FRAND, at least to the extent the FRAND standard would actually be subject to royalty payment. As seen regarding innovation, interoperability and overall consumer benefits, Linux and its derivatives have been one of if not the most important technology in creating the efficiencies discussed in this thesis regarding innovation, interoperability and cost reductions in public procurement. Using FRAND would be especially damaging to interoperability since it would render the standard incompatible with the majority of open-source software. With interoperability being the objective of Article 13, the inclusion of royalty

bearing standards would definitely make the realization of the discussed efficiencies more difficult and possibly impossible depending on the extent to which actual royalties are used. The license issue also highlights the close relationship between RF and open source, which is an important factor in this discussion.

For the realization of the efficiencies, especially the ones stemming from open-source the consensus among procurers and other stakeholders seem to be that there is need for policy initiatives in favor of RF and open-source software to level the playing field, meaning that without provisions like Article 13 promoting RF software the efficiencies would be less realizable.

Another important factor for these efficiencies to come to fruition is that procurers actually use the standard. That is also the whole idea of having interoperability standards as well as the objective of EU standardization, that the standards are widely used among procurers within the Union. Considering the national development in ICT procurement where several Member States have taken initiatives and created policies promoting the use of RF or open-source technology and in some cases only allowing procurement of royalty bearing ICT when no other option is possible. Several procurers will not be able to use the standards to the extent it includes royalties, and that Union and National procurement policies will clash with each other on several occasions, rendering the ICT procurement situation less clear and thus more complicated. That would make the efficiencies of using RF technology in the standard less realizable as well opposing the scope of Article 13 of and EU standardization policy. This also implies that it would not be in the best interest of Article 13 and Union standardization policy in general to select standards including royalties.

Considering these effects of using FRAND and royalty bearing technology on the realization of efficiencies discussed in this thesis in relation with the legal demands from the Guidelines and case law regarding what constitutes “indispensability of restriction” and especially the Commissions reasoning in X/Open the conclusion is that the restriction in the form of a RF requirement on Article 13 would be considered necessary and thus fulfilling the third condition of Article 101(3) TFEU.

#### **5.1.4 Fourth Condition**

The fourth and last condition that needs to be met for the restriction to be considered as pro-competitive, states that the restriction cannot allow “elimination of competition” with additional consideration regarding creation of dominance on the market. From the Guidelines and the case law it also follows that the market situation needs to be analyzed to make a realistic assessment of the competition and that the promotion of rival competition is a priority of European Competition Law.

First of all we have to recognize that we are discussing voluntary standards available for public procurement. Meaning that there is no forcing or exclusion involved, and even though some stakeholders might avoid participation they are not closed out from the process, but chooses to do so freely. The standards selected on RF basis would be available to all competitors on the same conditions and the fact that the standard would be RF would create a more even playing field on markets where the standard is implemented since it is not giving advantages to a financially stronger implementer. Considering that the fact that the X/Open group would share their information and the technologies among themselves as well as with other competitors made the Commission come to the conclusion that no competition could be eliminated by the restriction. A restriction that was stricter and more direct than the restriction examined in this thesis would constitute. The conclusion is thus that based on the nature of the restriction at hand and the requirements on competition in the Guidelines and case law, a RF requirement in Article 13 of the Regulation would not make possible the elimination of competition according to European Competition Law.

But since the Guidelines promote rival competition and this thesis is about a comparison from a competition perspective the examination also included the overall effect of RF technology on rival competition.

It was found in that regard that few stakeholders would avoid the standardization process because of a RF requirement and that all except pure upstream companies would benefit from participating in such standardization. This was supported both theoretically and practically by the many members of organizations with RF policies as well as the low number of ICT standards with royalty payments that are actually selected and implemented even without RF requirements.

When concerning dominant positions and potential abuse thereof, the investigation showed that the use of RF and open-source software is beneficial especially in presence of natural monopolies which often is the case for standardized technology. Considering the unique properties of the software interoperability market and the need for network effects that often creates dominant positions and monopolies, the need for interoperability and openness for a competitive market is significant. Based on the investigation regarding rival competition in this thesis, it is suggested that using RF standards would increase interoperability and network effects while lowering barriers to entry as well as mitigating risk of lock-in and vendor dependence which all would be beneficial to rival competition.

Since when it comes to participation in the standardization process there seem to be few companies that would actually opt to not partake depending on their business model, while several stakeholders seem to prefer the RF approach, leading to the belief that RF might even be a way to attract participants rather than discourage them, rendering RF standards a positive influence on rival competition. So the conclusion is that not only is a RF requirement not capable of eliminating competition but the use and

promotion of RF standards and open-source software is positive for rival competition.

This leads to the overall conclusion that including the requirement for technology to be available on a RF basis to be eligible for the standards set in accordance with Article 13 of the Regulation would fulfill all the four cumulative conditions stated in Article 101(3) TFEU and thus be considered as pro-competitive according to European Competition Law. Another conclusion is subsequently that RF is a more adapt licensing approach than FRAND when setting voluntary ICT standards from a competition perspective.

## 5.2 Analysis

There are certain things that are important to keep in mind when examining which licensing form that is better from a competition standpoint is first, what is it to be used for, and second, what is it to be used on?

In this case the licensing form is to be used for voluntary standards in public procurement. It is important to keep that in mind since it is a major consideration in most parts of the discussions and it limits the strictness of the restriction on several levels. The scope of Article 13 is to facilitate and make public ICT procurement in the Union more effective, so the main objective is to optimize the situation for the procurers. As the research for this thesis has confirmed there are many benefits in using RF standards for public ICT procurement that from a competition standpoint outweighs the negative effects of a restriction against technology that is not available on RF basis. This would most likely not be the case if the restriction instead of a recommended standard was regarding all ICT technology available for public procurement. Research has demonstrated that RF technology is not always better and to limit the options of the public procurers would go against the objective of European ICT standardization. In this case since it is regarding voluntary standards available to help the procurers, the situation changes, and based on the information in this thesis there are several advantages that can be gained by promoting RF technology, especially in public procurement, and including a RF requirement in a provision such as Article 13 would produce such a promotion at very little cost or risks for either the EU, competition in the ICT industry or the procurers.

The situation regarding rival competition would also change rather dramatically if the discussion were about something more intrusive than voluntary standards.

The second thing to keep in mind is what the license form is to be used on, hence what kind of technology. As we have seen in this thesis, the special industry characteristics is what makes RF such a popular and successful

licensing form within the ICT market, which obviously does not imply that RF policies would be right for other industries.

However, on the interoperability software market it seems that RF standards is and can be very beneficial in public procurement and that the promotion of such standards is needed to fully exploit these benefits. While it is important to promote such technology it is equally important not to force or limit the procurer's options, especially considering the difficulties in properly using open-source software and the fact that proprietary software sometimes is the better and more appropriate option. Considering this situation I am of the opinion that the best solution would be to adopt policies that prioritize RF technology when "as good or better" than the proprietary option with the obligation to produce a motivation when procuring proprietary software for interoperability purposes. Since for example Sweden for several years has recommended the use of open standards in accordance with the definition in EIF version 1.0 with very little result it suggests the need for more than mere recommendations to activate the procurers in utilizing RF technology.

There is also an argument to be made that the nature of interoperability software and the scope of its usage is promoting it to be available on a RF basis for it to have its intended effect. The fact that so few ICT standards, such as regarding the Internet or the Web are subjected to royalty payments and basically all important stakeholders still participate supports that argument. That is likely why all the standards selected by the Commission in accordance with Article 13 to this point has been RF, and based on the results of my investigation and the status of the ICT industry I doubt that they will include royalty bearing technology in the future standards.

This might well be an effective approach, to have FRAND but only select RF technology to be included in the actual standards. That way the lobby groups promoting FRAND will remain contented, since most of the significant proprietary companies partake in the setting of RF standards regarding the Web and Internet without objecting, their motivation seems to be preventing RF from becoming the norm in the software industry rather than to actually have ICT standards covered with royalty payments. While not including any royalty bearing technology would still mean that the standards are compatible with Linux and all other open-source software covered by GPL licenses and thus being fully interoperable and with less constrains. That would also imply that RF is a better approach than FRAND for ICT standardization, since if all technology included in the standards are without royalties, the policy is in practice RF rather than FRAND. This is not a bad solution considering all aspects of the industry, and does not seem to directly step on anyone's toes.

The big problem regarding interoperability standards and rival competition would be if the FRAND approach would mean the actual inclusion of royalty payments for the use of the standards, which means that some of the problems discussed in this thesis would to a large extent be mitigated by the



situation remaining as it is today, with FRAND but without actual royalties. For example, based on this thesis, the inclusion of royalties in the actual standards would most likely not fulfill the conditions in Article 101(3) TFEU, if any of them.

Personally however, I miss the promotion of RF and open-source software from a Competition Law standpoint that a RF requirement in Article 13 would signify. Based on the research made for this thesis there seem to be several competition reasons to have an RF requirement that transcends the mere inclusion of royalties in the actual standards. Interviews with ICT procurers and policy makers show that there is a need for positive reinforcement from government policies to properly utilize open-source in public procurement. Such policies can have positive impact on rival competition since the open-source alternative on many software markets is the main or only competitor to dominant proprietary software, such promotions can also be utilized by policy maker as a tool to create better balance on monopoly or oligopoly markets. Using a RF requirement would also make the process clearer and provide another lever of transparency and security for stakeholders and implementers, since it would guarantee that future standards will be available on a RF basis.

Most of the efficiencies discussed in this thesis have been regarding the use of RF and open-source software and the realization of those efficiencies are largely depending on procurers easily being able to access such technology, and promotion through policy initiatives seem essential for such facilitations. So even if some of the problems with using FRAND instead of RF can be sidestepped by not including royalties in the actual standards, many of the potential benefits can still be more difficult to realize due to lack of policy support for such technologies. Consequently, a RF requirement would still be more pro-competitive than a FRAND that in actuality does not produce royalty bearing standards (not to confuse with FRAND-Z) because of its legal certainty, efficiency and especially its promotion of RF technology in public procurement outside of the standard itself. This promotion might also be the reason behind the proprietary software lobby's interest in EIF and other Union initiatives using FRAND instead of RF even though there is not the same interest in actually having royalty bearing technology included in the standards, and most proprietary company in reality seem to prefer RF when it comes to interoperability software standardization.

Another important aspect is what licensing approach would be most beneficial in realizing the objectives of Article 13 and EU's ICT standardization policy in general. These objectives include the creation of interoperability and the promotion of innovation and competition. From the research made for and presented in this thesis and the conclusions already made regarding these three objectives, the conclusion is that a RF policy would a better solution than FRAND in accomplishing the objectives of ICT standardization in the European Union.



# Bibliography

Baldwin Howard (2014) *“4 reasons why companies says “yes” to open source”* <http://www.computerworld.com/article/2486991/app-development-4-reasons-companies-say-yes-to-open-source.html?>

Berners-Lee Tim, (2003) *“Director's Decision, W3C Patent Policy”*  
<http://www.w3.org/2003/05/12-director-patent-decision-public.html>

Berners-Lee Tim (2010) *“Long Live the Web: A Call for Continued Open Standards and Neutrality”* <http://www.scientificamerican.com/article/long-live-the-web/>

Blind Knut, Gauch Stephan, Hawkins Richard, (2011) *“How stakeholders view the impacts of international ICT standards”* Elsevier Ltd

BSA, letter (2010) in regard to the draft of EIF version 2.0  
<http://fsfe.org/activities/os/bsa-letter-ec.pdf>

Dalle Jean-Michel, Jullien Nicolas, (2001) *“OPEN-SOURCE vs. PROPRIETARY SOFTWARE”*  
<http://flosshub.org/sites/flosshub.org/files/dalle2.pdf>

ECIS (2010) *“ECIS Statement on the proposed new European Interoperability Framework”*  
<http://www.ecis.eu/documents/ECISStatementreEIF13.10.10.pdf>

Europe Economics Chancery House” (2011) *“Draft guidelines and measures to improve ICT procurement”*  
<http://cordis.europa.eu/fp7/ict/ssai/docs/study-action23/study44-survey2results.pdf>

Feilner Markus, (2013) *“LiMux – the IT evolution”: an open-sourcesuccess story like never before”* <https://joinup.ec.europa.eu/elibrary/case/limux-it-evolution-open-source-success-story-never>

Geradin Damien (2008) *“What’s Wrong with Royalties in High-Technology Industries?”*  
[http://innovationforum.gmu.edu/2008/papers/high\\_tech\\_royalties.pdf](http://innovationforum.gmu.edu/2008/papers/high_tech_royalties.pdf)

Ghosh A. Rishab, (2005) *“An Economic Basis for Open Standards”*  
University of Maastricht  
[http://intgovforum.org/Substantive\\_1st\\_IGF/openstandards-IGF.pdf](http://intgovforum.org/Substantive_1st_IGF/openstandards-IGF.pdf)

Glader Marcus, (2010) *“OPEN STANDARDS: “Public Policy Aspect and Competition Law Requirements”* European Competition Journal VOL. 6 NO. 3

Hsing K. Cheng, Yipeng Liu, Qian Tang (2011) “*The Impact of Network Externalities on the Competition Between Open-source and Proprietary Software*” *Journal of Management Information Systems* / Spring 2011, Vol. 27, No. 4, pp. 201–230

IDABC case study (2009) “*The Swedish National Police: How to avoid locking yourself in while saving money*”

Kroes Neelie (Speech) (2010) “*How to get more interoperability in Europe Address*” [http://europa.eu/rapid/press-release\\_SPEECH-10-300\\_en.htm](http://europa.eu/rapid/press-release_SPEECH-10-300_en.htm)

Kroes Neelie (Speech) (2009) in “*Setting the Standards High*” [http://europa.eu/rapid/press-release\\_SPEECH-09-475\\_en.htm?locale=en](http://europa.eu/rapid/press-release_SPEECH-09-475_en.htm?locale=en)

MacCarthy Mark, (2009) “*Open Standards, Competition and Patent Policies*” Georgetown University

Mair Carl, (2012) “*Openness, Intellectual Property and Standardization in the European ICT Sector*” *IP Theory* vol 2 issue 2, <http://www.repository.law.indiana.edu/cgi/viewcontent.cgi?article=1012&context=ipt>

MINISTRY OF JUSTICE, OPERATIONS AND ADMINISTRATION  
2007:2 (2007) “*Migrating a Ministry to OpenOffice.org*” *MINISTRY OF JUSTICE, FINLAND HELSINKI*”

Mitchell G. Iain, Mason Stephen, (2011) “*Compatibility Of The Licensing Of Embedded Patents With Open-source Licensing Terms*” <http://www.ifosslr.org/ifosslr/article/view/57/100>

Musk Elon (2014) “*All our patents belong to you*” <http://www.teslamotors.com/blog/all-our-patent-are-belong-you>

Offerman Andy (2013) “*Open versus Closed Source, A Delicate Balance*” <https://joinup.ec.europa.eu/elibrary/case/open-versus-closed-source-delicate-balance>

Roy Hugo, Gerloff Karsten (2009) “*EIFv2: Tracking the loss of interoperability*” <http://fsfe.org/activities/os/eifv2.en.html>

Shaikh Maha, Cornford Tony, (2011) “*Total cost of ownership of open-sourcesoftware: a report for the UK Cabinet Office supported by OpenForum Europe*” London School of Economical science

Simcoe Tim, (2005) “*Open Standards and Intellectual Property Rights*” [http://people.bu.edu/tsimcoe/documents/published/OpenStandards\\_IPR.pdf](http://people.bu.edu/tsimcoe/documents/published/OpenStandards_IPR.pdf)

Stanford, "*Ethics of a Software Monopoly*"

[http://cs.stanford.edu/people/eroberts/cs201/projects/corporate-monopolies/benefits\\_ethics.html](http://cs.stanford.edu/people/eroberts/cs201/projects/corporate-monopolies/benefits_ethics.html)

Undheim Trond, (2013) "*Portugal's New Interoperability Law*"

[https://blogs.oracle.com/trond/entry/portugals\\_new\\_interoperability](https://blogs.oracle.com/trond/entry/portugals_new_interoperability)

Updegrove Andy (2011) "*Do Royalty-Free Standards "Stifle Innovation?"*"

<http://www.consortiuminfo.org/standardsblog/article.php?story=20110304122357355>

Venkatesh Hariharan (2010) "*Open standards policy in India: A long, but successful journey*" <http://opensource.com/government/10/11/open-standards-policy-india-long-successful-journey>

Weitzner D. Daniel, (2004) "*Standards, Patents and the Dynamics of*

*Innovation on the World Wide Web*" <http://www.w3.org/2004/10/patents-standards-innovation.html>

Wessman Richard (2013) "*Upphandling av IT- inlåsningseffekter och*

*möjligheter*" (IT procurement, lock-in effects and possibilities" written for the Swedish Competition Authority, Konkurrensverkets uppdragsforskningsrapport 2013:2

West Joel (2004) "*What are Open Standards? Implications for Adoption,*

*Competition and Policy*" Presented at Standards and Public Policy Conference 2004 Chicago

Wlodarz Derrick (2013) "*One German city drops Openoffice for MS office, why Open-source still fails to impress*"

<http://betanews.com/2012/12/11/one-german-city-drops-openoffice-for-ms-office-why-open-source-still-fails-to-impress/>

"*Why Open-Source Principles Are a Recipe For Innovation*"

<http://www.forbes.com/sites/ashoka/2012/07/25/why-open-source-principles-are-a-recipe-for-innovation>

"*Lessons learned by Greek open-source project*"

<https://joinup.ec.europa.eu/elibrary/case/lessons-learned-greek-open-source-project>

"*Top 10 Open-source Software that Rocks the World Wide Web*"

<http://www.linux.com/community/blogs/133-general-linux/783142-top-10-best-open-source-softwares-that-rocks-world-wide-web>

## Licenses

GNU General Public License, version 2, <http://www.gnu.org/licenses/gpl-2.0.html>

GNU General Public License, version 3, <http://www.gnu.org/licenses/gpl-3.0.html>

## European Union Material

### Legislation

Treaty on the Functioning of the European Union. OJ C 326. 26.10.2012.

Council Regulation (EC) No 1/2003 of 16 December 2002 on the implementation of the rules on competition laid down in Articles 81 and 82 of the Treaty. OJ L 1, 04.01.2003

REGULATION (EU) No 1025/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 25 October 2012 on European standardization OJ L 316/12 14.11.2012

### Official Documents

COM(2013) 455 final COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS *Against lock-in: building open ICT systems by making better use of standards in public procurement* 2013

COM(2011) 311 final COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL AND THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE *A strategic vision for European standards: Moving forward to enhance and accelerate the sustainable growth of the European economy by 2020*, 2011

COM(2010)245 final COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS *A Digital Agenda for Europe, 2010 Commission Notice, Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements*, OJ C 11/1 14.1.2011

COM(2009) 324 final, WHITE PAPER *Modernising ICT Standardisation in the EU - The Way Forward*, 2009

Commissions Notice, *Guidelines on the application of Article 81(3) of the Treaty* (2004/C 101/08), OJ C 101/97 27.4.2004

EUROPEAN COMMISSION, EUROPEAN INTEROPERABILITY FRAMEWORK FOR PAN-EUROPEAN eGOVERNMENT SERVICES “EIF” version 1.0, European Communities, 2004

COM(2010) 744 final, Annex 2 to the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Regions *'Towards interoperability for European public services'* “EIF” version 2.0, 2010

COMMISSION IMPLEMENTING DECISION of 3 April 2014, *on the identification of ICT technical specifications eligible for referencing in public procurement* OJ L 102/18 5.4.2014

European Commission report, *“Implementing FRAND standards in Open Source: Business as usual or mission impossible?”*

## **Legislation and Communication of Member States**

Agenzia per L'Italia Digitale, Circolare 6 dicembre 2013 n.63, Linee guida per la valutazione comparativa prevista dall'art. 68 del D.Lgs. 7 marzo 2005, n. 82 “Codice dell'Amministrazione digitale” 2013 (Italy)

Statens Offentliga Utredningar SOU 2009:86 *”Strategi för myndigheternas arbete med e-förvaltning”* 2009 (Sweden)

Ministry of Economic Affairs, *“The Netherlands in Open Connection”* 2007 (Holland)

UK Cabinet Office, *“Open-source Software Options for Government”* Version 2.0, 2012 (UK)

# Table of Cases

Commission Decision of 15 December 1986 87/69/EEC, OJ L 35/36 6. 2. 87 “*X/Open*”

Judgment of the Court of 13 July 1966, Joined Cases 56 and 58-64, “*Consten Grundig*”

Commission Decision of 14 September 1999 2000/182/EC OJ 2000 L 58, p. 16, “*GEAE/P&W*”

Commission Decision of 16 December 1994 94/896/EC OJ 1994 L 354, “*Asahi/Saint Gobain*”

Commission Decision of 17 July 1996 96/546/EC OJ 1996 L 239, “*Atlas*”

Judgment of the Court of First Instance of 17 September 2007 T-201/04 – “*Microsoft v Commission*”