

FRAND COMMITMENTS—THE CASE FOR ANTITRUST INTERVENTION

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A. INTRODUCTION

There are currently a number of high-profile competition law disputes relating to commitments given by owners of patents that are essential to a technical standard to license on “fair, reasonable and non-discriminatory” (FRAND) terms. This article gives an overview of the issues raised by FRAND commitments with specific reference to the telecoms industry.

It is widely acknowledged that intellectual property rights (IPR) are crucial to promoting innovation. However, patents covering technology that is voluntarily contributed to an open standard cannot be exploited like any other patent. Once downstream investments are made implementing a standard, an industry can be locked into a patented technology for a long time. This gives the essential patent owner increased market power. Essential patent owners should not be in a position to exploit the market power that is created or enhanced through the inclusion of their technology into an industry standard.

Standards bodies have typically sought to address this risk by demanding FRAND commitments from IPR holders prior to the adoption of a standard. In providing these commitments, owners of essential patents accept that their technology must be made available to third parties on FRAND terms. In return, the technology owner obtains the benefit of owning patents essential to a widely used standard. FRAND commitments have historically proven to be generally effective in constraining the market power obtained through standardisation.

However, the enforceability of such commitments has come into question and the meaning of “fair” and “reasonable” has in certain cases been disputed. Some essential patent owners claim they can charge whatever the market can bear in

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clear breach of FRAND commitments.¹ In these circumstances, it is important for competition authorities and courts to apply competition law to enforce FRAND commitments. This article sets out the case for intervention under the competition rules and explores the numerous benchmarks that can be used for these purposes, including *ex ante* competitive rates, industry experience and expectations including the use of comparators and the contribution made to the standard.

The European Commission is increasingly active in the field of standards in Europe, as evidenced by recent policy initiatives.²

Moreover, the European Commissioner for Competition has stated that “[s]tandards are clearly more important than ever”, and commented that where a technology owner exploits the market power gained from its proprietary technology becoming a *de facto* standard, “then a competition authority or a regulator may need to intervene”.³

There are three current disputes before the European Commission where it has been asked to investigate to decide whether a technology owner has exploited its market power unlawfully by failing to license its technology on FRAND terms:

1. Qualcomm

In 2005 complaints were lodged with the Commission by six complainants against Qualcomm concerning the terms under which Qualcomm licensed its patents essential⁴ to the 3G UMTS standard for mobile telecommunications, alleging that Qualcomm had breached Articles 81 and 82 EC and failed to meet

¹ For example, in the course of US litigation, Qualcomm argued that “[c]harging what the market will bear . . . is not an anticompetitive or unreasonable act” (*Broadcom Corporation v Qualcomm Incorporated* (Civil Action 05-3350), District Court of New Jersey, Memorandum in Support of Defendant’s Motion to Dismiss, 9 December 2005, I.A.3).

² The Commission has called for “a stronger role for standardisation in support of innovation” and commented that standardisation is “increasingly important, in particular in the ICT domain”. See Final Communication from the Commission to the Council, the European Parliament and the European Economic and Social Committee, “Towards an Increased Contribution from Standardisation to Innovation in Europe”, COM(2008) 133, 11 March 2008, and Draft Position Paper, “Standardisation, Competition and Intellectual Property Rights”, ICT/SC (2008) No 55. In November 2008, the Commission held a one-day IPR Workshop in Brussels on IPRs and ICT standards.

³ European Commissioner for Competition Neelie Kroes, “Being Open About Standards”, SPEECH/08/317, 10 June 2008.

⁴ According to the ETSI IPR Policy, essential

“as applied to IPR means that it is not possible on technical (but not commercial) grounds, taking into account normal technical practice and the state of the art generally available at the time of standardization, to make, sell, lease, otherwise dispose of, repair, use or operate EQUIPMENT or METHODS which comply with a STANDARD without infringing that IPR. For the avoidance of doubt in exceptional cases where a STANDARD can only be implemented by technical solutions, all of which are infringements of IPRs, all such IPRs shall be considered ESSENTIAL.”

commitments made to ETSI that it would license its declared essential patents on FRAND terms.⁵ Complaints were also filed in Korea and Japan under their respective competition rules. Competition authorities in all three jurisdictions are currently investigating the complaints.

2. Rambus

In August 2007 the European Commission confirmed that it had sent a Statement of Objections to Rambus alleging that the company was infringing Article 82 EC by demanding unreasonable royalties for use of certain patents relating to the DRAM standards developed by the Joint Electron Device Engineering Council.⁶ The Commission's preliminary view was that it was appropriate "that Rambus charge a reasonable and non-discriminatory royalty rate". In response, Rambus has offered commitments to address the Commission's concerns, including the grant of 5 year licences and reduced royalty rates.⁷ The Commission invited comments by 12 July 2009.⁸

3. ICom

Nokia lodged a formal complaint with the Commission against ICom in January 2009 alleging that ICom has failed to license on FRAND terms a portfolio of patents relating to wireless networks acquired from Robert Bosch. The Commission is considering whether or not to open a formal investigation.⁹

The mobile telecoms sector is particularly exposed to such disputes given the large number of patent holders involved, the fact that the telecoms standards are used for 10–20 years and the global scope of the affected markets. The telecommunications standards GSM and its 3G evolution, UMTS, have been chosen by most operators around the world. Of the approximately 1 billion handsets sold globally every year, some 80% comply with GSM and/or UMTS standards.

⁵ See the joint press release of Broadcom, Ericsson, NEC, Nokia, Panasonic Mobile Communications and Texas Instruments dated 28 October 2005, available at http://www.broadcom.com/press/release.php?id=774809&industry_id=4. Nokia withdrew its complaint in July 2008 and Broadcom settled with Qualcomm in April 2009—see the respective press releases at <http://www.nokia.com/A4136001?newsid=1238093> and http://www.broadcom.com/press/release.php?id=s379764&industry_id=4 (all last accessed on 19 June 2009).

⁶ European Commission press release of 23 August 2007, "Antitrust: Commission confirms sending a Statement of Objections to Rambus", MEMO/07/330.

⁷ See http://ec.europa.eu/competition/antitrust/cases/decisions/38636/proposed_commitments.pdf (last accessed on 19 June 2009).

⁸ See <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/09/273&format=HTML&aged=0&language=EN&guiLanguage=en> (last accessed on 19 June 2009).

⁹ The complaint has arisen from initial proceedings filed by Nokia against Robert Bosch in December 2006 in Germany seeking a declaration that it was obliged to honour its agreement to grant licenses to Nokia on FRAND terms. See "Nokia Files Formal Complaint against ICom in Telecom Patents Dispute", *MLex Market Intelligence*, 7 January 2009.

These standards are very detailed and have been developed by many companies working together in standard setting organisations over a number of years. More than 40 companies have declared over 5,000 patents essential to GSM, whilst for UMTS more than 60 companies have claimed over 10,000 patents essential. It is not possible to manufacture mobile handsets or other wireless devices that comply with these standards without infringing essential patents and therefore licenses are required from a significant number of IPR holders.

There appears to be a growing propensity to litigate or file antitrust complaints in more recent years in relation to essential patents. The new Chairman of the Federal Trade Commission of the United States appointed by the Obama Administration, Mr Jon Leibowitz, has made it clear that standardisation abuses are one of his two priority areas.¹⁰

B. THE IMPORTANCE AND BENEFITS OF STANDARDS

It is clear that standardisation can generate the following important benefits for consumers.

1. Interoperability

European Commissioner for Competition Mrs Neelie Kroes has stated that standards are the “foundation of interoperability”.¹¹ Standardisation of mobile phone handsets allows consumers to use the same handset throughout Europe (and in many other countries) regardless of the manufacturer of the product. This interoperability leads to increased network effects as consumers value the product according to the number of its users.

2. Lower Costs and Prices for Downstream Products

Where all products contain the same core technology, manufacturers may more easily achieve economies of scale thus allowing for lower costs and lower prices. Detailed standards can also lower costs for new entrants.

3. Improved Product Quality

By pooling their respective technologies and selecting the best, members of standards-setting organisations (SSOs) are likely to create a better standard collectively than they would be able to achieve independently if each of them relied only on their own technologies.

¹⁰ Speech delivered at the 2009 ABA Anti-trust Spring Meeting in Washington.

¹¹ SPEECH/08/317, *supra* n 3.

4. Reduced Risk for Consumers

Absent standardisation, inter-technology competition often results in only one of few technologies dominating the market. This means that consumers face the risk of purchasing equipment that may rapidly become obsolete if their chosen technology is marginalised.¹²

5. Increased Downstream Competition

Standardisation can increase the intensity of competition in downstream markets by reducing switching costs for consumers. For example, having mobile handsets that can be used on competing operators' infrastructure increases customers' ability to switch between telephone operators. This may lead to lower prices being charged by operators for telephone services. Similarly, the creation of an open standard may well increase competition between handset and other equipment manufacturers.

6. Increased Incentives to Innovate

Since inter-technology competition often results in one technology becoming a de facto standard, the suppliers of new products incur the risk of being forced to exit the market before they have recovered their costs of entry ("sunk costs").¹³ Standardisation reduces these particular risks and increases incentives to invest in the standardised technology. Much R&D is conducted to support standardisation efforts prior to first release but also during the life of a standard (which may benefit from multiple upgrades). Standardisation expands the customer base for products complying with the standard and accelerates adoption of new technology and equipment, leading to greater revenue earlier on than would be the case, absent standardisation. This further increases firms' incentives to invest in research and development aimed at improving the standard or at introducing new products and services.

C. STANDARDS ELIMINATE COMPETITION

Although standardisation can bring important benefits for consumers and for society as a whole, the adoption of technology standards can also eliminate or substantially reduce competition in a number of ways:

¹² For example, in relation to high-definition DVD formats, Toshiba's HD DVD technology has effectively been marginalised as a result of the success of Sony's Blu-Ray technology. In years past, Betamax technology became obsolete as a result of the success of VHS.

¹³ The production of new products can require significant investments in R&D, and manufacturing facilities which cannot be recovered if production ceases.

1. Elimination of Inter-technology Competition

“A standard, by definition, eliminates alternative technologies.”¹⁴ It is commonly accepted that where there are potentially competing technologies prior to a standard being adopted, collective standardisation reduces or eliminates inter-technology competition.¹⁵ For some standards, there are competing technology concepts that are well developed and meet a substantial part of the standard’s requirements. These concepts may compete with other potential concepts for selection by the standard setting body for development as the basis for an industry standard. Once a particular technology concept is selected, the competitive constraints that were exerted by the competing technology concepts will be eliminated.¹⁶

Moreover, there are in certain circumstances a number of competing solutions to technical problems that are identified during the standard setting process. Standard setting in the telecoms industry often involves thousands of decisions taken collectively by committees as detailed specifications are developed. Many of these decisions involve a choice between competing technical contributions from different participating innovators who are, in parallel with the standardisation process, running R&D programmes to support the standardisation process and filing patent applications to protect their innovations. The selection of each relevant technical contribution in such circumstances will reduce or eliminate the competitive constraints previously exerted by the competing contributions.

2. Restricts Competition from Future Technologies

The costs to network operators and customers of switching away from the standardised technology once implemented are substantial, effectively restricting the competitive constraints that may be exerted by competing future technologies (“lock-in”). This lock-in effect is compounded by the network effects typical of standardised industries. As a consequence, the forward-looking value of the adopted technology relative to future alternatives increases. Once part of the investment in implementing the adopted technology is undertaken, an emerging equally qualified new technology will be perceived as a higher cost alternative, because it would be valued on a forward-looking basis (since it would require

¹⁴ *Broadcom Corporation v Qualcomm Incorporated*, No 06-4292 (3d Cir 2007).

¹⁵ See, eg *RIM v Motorola*, Civil Action No 3:08-CV-0284-G consolidated with 3:08-CV-0317-G, US District Court, Northern District of Texas, Dallas Division, Order denying Motorola’s action to stay, dismiss or transfer, 11 December 2008.

¹⁶ For example, five alternative technology concepts were being actively considered by ETSI in relation to UMTS: (i) the Alpha Concept (based on wideband CDMA (WCDMA)); (ii) the Beta Concept (based on OFDMA); (iii) Gamma Concept (based on wideband TDMA (WTDMA)); (iv) Delta Concept (based on TDMA with spreading (TD-CDMA)); and (v) the Epsilon Concept (based on ODMA). A number of the concepts were considered technically similar in quality.

firms to incur additional sunk costs that had already been incurred for the adopted technology).

3. Can Take Away the Option to Miss a Generation

By committing technology-specific investments, industry firms surrender the possibility of not implementing any new technology at all. Before lock-in, mobile operators may have the choice between introducing one of a number of alternative new technologies or not introducing any. They could postpone the choice of the new technology until a new generation of technologies emerges, continuing to use the existing technology in the meantime.¹⁷ Some valuable innovations may be too expensive to implement.

D. STANDARDS CAN CREATE OR ENHANCE THE MARKET POWER OF ESSENTIAL PATENT OWNERS

Once a patented technology is incorporated as an essential part of a standard, it is not possible to manufacture standard compliant products without infringing the IPR covering that technology. The market power of the essential patent holders increases as a result of standardisation. For example, if a number of alternative technologies compete prior to the adoption of a standard, none of them could command more than the competitive price. However, once a standard has been chosen, the industry will start developing and producing goods that comply with the standard. In the mobile telecoms industry, significant investments are made in designing the product, setting up the production facilities, purchasing the network equipment and handsets, rolling out the networks, and so on, which are specific to the standard. Once equipment manufacturers and network operators have incurred such significant sunk costs, they become effectively locked-in to that standard, since these investments would be lost if they were to switch to a different technology.¹⁸

¹⁷ For example, in the case of 3G mobile telephone technology, operators and equipment manufacturers could have continued to use GSM and its evolutions (such as GPRS and EDGE) until 4G technology was ready. It is understood that operators in South Korea and China considered not implementing 3G, and waiting instead for the introduction of 4G mobile phone technology. This “wait and see” strategy may not be an option where a standard has been mandated by a regulatory authority.

¹⁸ If, for example, a handset manufacturer wins a major contract with an operator that has already invested in UMTS networks, that manufacturer cannot offer CDMA2000 handsets as an alternative. An operator would need to change the base stations and a large part of its high cost infrastructure to switch from one technology to another. The costs and risks for operators associated with switching standards mean that manufacturers must in practice produce products for the standard chosen by the operator.

The owner of a relevant essential patent in theory has the ability to (i) block companies from producing any products compliant with the standard and (ii) demand royalties for its patent that are significantly higher than the royalties it could have demanded had the technology not been included in the standard, or before the standard was adopted and competition eliminated (known as the “hold-up” problem).

The hold-up problem is particularly severe with mobile telecoms standards because the standards that are adopted are used for a long time and the costs that are associated with switching to an alternative standard are high. For example, the GSM standard was first adopted in the early 1990s. The GSM Association estimates that approximately 80% of mobile handsets are currently based on the GSM standard.¹⁹ Most third- and fourth-generation handsets will continue to incorporate GSM technology given market requirements and the time and cost required to roll out new network infrastructure.

E. ROYALTY STACKING

It is established economic theory that if multiple owners of complementary products, which are essential inputs, set prices for these inputs independently, the combined price will exceed the rate that would be charged by a single owner of all the products concerned (Cournot effects). This problem is greater the larger the number of complementary product owners, the stronger the degree of complementarity between these and the larger the mark-up.

The licensing arrangements for mobile telecoms standards are particularly susceptible to Cournot effects since (i) essential patents are “perfect complements” (a licence for one patent has no value unless all other essential patents are licensed too); (ii) there are a large number of essential patents owned by a large number of firms; and (iii) a royalty rate is “only mark-up” since the marginal cost of licensing per unit produced is zero.²⁰

Royalty stacking is therefore a risk inherent in mobile telecoms standards that could expose consumers to higher prices (as a result of increased royalty costs) quite apart from the risks associated with the “hold-up” problem.

¹⁹ See http://www.gsmworld.com/newsroom/market-data/market_data_summary.htm (last accessed on 19 June 2009).

²⁰ The importance of the Cournot effect in standard setting has been underlined by recent economic literature. See, eg C Shapiro, “Navigating the Patent Thicket: Cross Licenses, Patent Pools and Standard Setting” available at <http://faculty.haas.berkeley.edu/Shapiro/thicket.pdf> (last accessed on 19 June 2009).

F. THE INDUSTRY SOLUTION: FRAND COMMITMENTS

To address “hold-up” and royalty stacking risks that are commonly associated with standards, the SSOs CEN, CENELEC and ETSI have all adopted IPR policies which require IPR owners to (i) disclose all patents essential to a standard; and (ii) commit to licensing their standards-essential patents on FRAND (or RAND) terms.²¹

By requiring firms to give FRAND commitments before industry participants are locked-in, SSOs extract a commitment from the essential patent owners that they will moderate their royalty claims and act in a reasonable and non-discriminatory manner. This provides valuable assurance to manufacturers and mobile telecoms operators that IPR owners will not impose unfair and unreasonable terms and will not discriminate.

Outside a standardised environment, patent owners are generally free to charge whatever price they choose for their innovation without fear of competition law infringement. However, collective standardisation involves special circumstances as a result of which an essential patent holder is constrained by competition law as to what it can charge. These special circumstances include the following:

- Generally an essential patent owner voluntarily offers its technology to the relevant SSO for incorporation into a standard (or allows its technology to be so incorporated) on the understanding that, if included in the standard, the patent owner will license that technology. This is fundamentally different to the normal patent owner, who, it is generally accepted, can refuse to grant a licence to any third party.
- Pursuant to the IPR policies of many SSOs, the essential patent owner is expected or required to commit to licensing on FRAND terms. When a patent owner offers its technology for inclusion in a standard or knowingly allows its technology to be included in a standard, it accepts, therefore, that it will have to license on FRAND terms to all interested parties, including downstream competitors.
- The patent owner is aware that downstream undertakings, relying on FRAND commitments, will, at least in the wireless telecommunication industry, make large scale investments in infrastructure and other equipment and services that will in effect lock-in the industry to the standard and create a captive market. In committing to license on FRAND terms, the patent owner accepts the obligation to moderate its royalty demands in exchange for the

²¹ All three European SSOs have committed themselves to ensure that standards, including any IPRs they might contain, can be used by market operators on fair, reasonable and non-discriminatory conditions—see General Guidelines for the Co-operation between CEN, CENELEC and ETSI and the European Commission and the European Free Trade Association, signed on 28 March 2003, [2003] OJ C91, 5.

benefits that will accrue from the increased licensing opportunities that are created by the inclusion of its technology in standard compliant products.

However, despite the widespread use of FRAND in the IPR policies of a significant number of major SSOs, virtually no such policies define the FRAND commitment as specifying or dictating a particular licensing result. Moreover, SSOs' roles are extremely limited as regards the enforcement of FRAND commitments. SSOs typically are not mandated to negotiate with essential IPR owners that refuse to license their essential IPR on FRAND terms. Often the only practical course of action open to SSOs in circumstances where FRAND commitments are not honoured is to change a standard's specification to avoid infringing essential IPR which will not be made available on FRAND terms.²² This is unlikely to provide a solution once operators have invested billions of euros in equipment conforming to the standard as first released.

G. WEAK FRAND

There are some essential patent owners that claim a FRAND commitment imposes no meaningful legal constraint on a patent owner (proponents of weak FRAND). Proponents of a weak interpretation of the FRAND obligation have argued:

- the IPR owner can refuse to license their essential IPR;²³
- the essential patent owner is only obliged to enter into “good faith bilateral negotiations of licensing terms and conditions”;²⁴
- FRAND does not impose any specific or concrete obligation on licensors regarding the level of royalties or other terms and conditions—the essential patent owner is free to charge what the market can bear;²⁵ and
- essential IPR licensors that have given a FRAND commitment can still claim injunctive relief against licensees who are willing to pay FRAND royalties.²⁶

The proponents of weak FRAND do not want any competition authority or national court to apply competition law to enforce FRAND commitments. If they succeed the industry will be exposed to the following risks:

²² See, eg Art 8.1 of ETSI's IPR Policy.

²³ In its Motion to Dismiss Broadcom's suit in the United States District Court of New Jersey, Qualcomm argued in relation to its WCDMA essential patents: “patent holders do not violate the antitrust laws by unilaterally refusing to license or sell a patent” (*Broadcom*, supra n 1, I.B.1).

²⁴ Qualcomm LTE/WiMax Patent Licensing Statement (December 2008), available at http://www.qualcomm.com/common/documents/licensing/LTE-WiMax_Patent_Licensing_Statement.pdf (last accessed on 19 June 2009).

²⁵ See *supra* n 2.

²⁶ See, eg D Geradin and M Rato, “Can Standard-setting Lead to Exploitative Abuse? A Dissonant View on Patent Hold-up, Royalty Stacking and the Meaning of FRAND”, (2007) 3 *European Competition Journal* 101.

- FRAND commitments could become meaningless;
- there will be no constraints on the royalties that can be charged for patents essential for existing standards such as GSM and UMTS;
- there is likely to be an upward spiral of royalty claims for many standards including telecoms standards resulting in higher costs for handsets and other standardised products; and
- operators will be reluctant to invest in new technology or to upgrade their networks to endorse faster and higher quality networks and the quality and range of services that will be available to consumers may be prejudiced.

These concerns are not theoretical. Operators have sought to obtain an indication from essential patent owners as to what they would charge for licences to use patents essential for 4G systems.²⁷ Although the aggregate amount claimed is confidential, it is well known in the industry that the aggregate royalties claimed by the relevant IPR owners is totally excessive and would be a substantial cost burden on both handset manufacturers and operators who wish to introduce higher quality services to consumers.

There is also mounting concern regarding the increasing prevalence of patent lawsuits in the ICT sector more generally.²⁸ Patent trolls²⁹ are considered to be a serious threat to open standardisation (through seeking excessive royalties).

Industry participants are employing a range of strategies in an attempt to discourage patent trolls from engaging in behaviour that can give rise to hold-up. These strategies include:

- defending nuisance patent litigation claims in full;³⁰
- forming defensive patent aggregation companies (which purchase patents in order to prevent those patents being bought by entities that may assert them exploitatively). Acquired patents are then made available to the industry on FRAND terms;³¹ and
- filing antitrust complaints.³²

²⁷ For further information see the Next Generation Mobile Networks website, available at <http://www.ngmn.org/> (last accessed on 19 June 2009).

²⁸ See "Google bietet Patentreppen Paroli", *FT Deutschland*, 20 February 2009.

²⁹ Whether a company is a patent troll is governed by its behaviour, namely "patent holders that prey upon manufacturers and other downstream firms by charging 'supracompetitive' rates for their patents". See D Geradin, A Layne-Farrar and A Jorge Padilla, "Elves or Trolls? The Role of Non-Practicing Patent Owners in the Innovation Economy", May 2008, TILEC Discussion Paper No 2008-018, 1. Patent trolls can include non-practising patent holders. However, a company that practises a standard and is a patent holder may also be capable of troll-like behaviour. See also J Golden, "Patent Trolls and Patent Remedies" (2007) 85 *Texas Law Review* 2112ff.

³⁰ See "Google bietet Patentreppen Paroli", *supra* n 28.

³¹ For example, the Allied Security Trust, Intellectual Ventures and RPX Corporation. See <http://www.alliedsecuritytrust.com/>, <http://www.intellectualventures.com> and <http://www.rpxcorp.com> (all last accessed on 19 June 2009).

³² See *supra* section A.

The threat of competition law proceedings against essential patent owners is currently an important constraint on the activities of those essential patent owners who are inclined to troll-like behaviour.

H. STRONG FRAND

In contrast, many in the telecoms industry understand the FRAND commitment to give rise to a set of clear legal constraints under European competition law on the behaviour of the essential patent owner. The proponents of strong FRAND recognise that rights attaching to standardised patents are qualified by the special circumstances of collective standardisation. The proponents of strong FRAND argue:

1. Obligation to License

The FRAND commitment gives rise to more than an obligation to enter into good faith negotiations. Should an IPR owner choose to assert its essential patents against another party, it is obliged to offer a licence to the potential licensee on fair, reasonable and non-discriminatory terms subject to reciprocity.³³ The FRAND commitment is a promise to the rest of the industry that the patent owner will license its patents on a reciprocal basis to allow all third parties including competitors to manufacture products. It is only on this basis that the telecommunication industry is prepared to invest billions of euros in standardised products.

2. Reasonable and Not Excessive Reward

The “fair and reasonable” part of the FRAND commitment imposes a real constraint on what the licensor can charge. The purpose of FRAND is to enhance the value of the standard for all stakeholders. FRAND licensing is a critical element of a trade-off that is central to an industry agreement to include patented technology in a common standard. The inclusion of patented technology in a standard enhances its value by expanding the market for that technology and eliminating competition from other technologies. In exchange for obtaining these benefits, the patent holder must comply with licensing conditions that promote downstream competition and protect consumers from exploitation by the patent holder of the additional market power it acquires as a result of the inclusion of its patents into the standard.

³³ See 6.1 of Annex 6 of the ETSI Rules of Procedure, 26 November 2008, available at http://portal.etsi.org/directives/25_directives_jan_2009.pdf (last accessed on 19 June 2009).

However, FRAND is not designed to permit users of the licensed technology to obtain rights to the technology at prices that do not reward R&D efforts, as this would reduce the incentive to innovate. It therefore represents a reasonable balance between the interests of licensors and licensees.

3. Limited Right to Injunctions

Where an essential patent owner has given a FRAND commitment, the owner accepts that the licensee is entitled to a licence provided the licensee is prepared to give a licence of its own essential patents (on FRAND terms) and provided that it is prepared to pay “fair” and “reasonable” royalties. Where a licensee is prepared to give a reciprocal licence and pay FRAND terms, no injunction should in principle be available since the only issue to be resolved is the amount of royalties to be paid.³⁴

I. WHY THE EUROPEAN COMMISSION SHOULD ENFORCE STRONG FRAND

The European Commission should intervene to enforce FRAND commitments where there is a flagrant breach of FRAND for a number of reasons:

- There is a clear legal basis for intervention under Articles 81 and 82 of the EC Treaty.
- There are strong policy reasons for intervention: standards play a central role in many industries, and in particular in promoting a single telecoms market and promoting the use of interoperable handsets within the EU and indeed worldwide.
- Consumers are likely to suffer substantial harm unless there is intervention.
- There needs to be a clear legal precedent set by the European Commission in this field.

These points are developed below:

³⁴ Injunctions can greatly magnify the bargaining power of the holder of an essential patent; the threat to obtain an injunction can enable a patent holder to negotiate royalties far in excess of the economic value of the patent holder’s contribution—a “classic hold-up” situation. A patent holder who has made a FRAND commitment should not be able to threaten an injunction against use of the technology to comply with the standard—an injunction would prevent a user from practising the standard, and a patent holder who threatens such injunction threatens to withdraw more surplus than its technology contributed. See J Farrell, J Hayes, C Shapiro, and T Sullivan, “Standard Setting, Patents and Hold-Up” (2007) 74(3) *Antitrust Law Journal* 638.

1. There is a Clear Legal Basis for Enforcing FRAND

Competition law enforcers can invoke both Articles 81 and 82 of the EC Treaty as a basis for the enforcement of FRAND.

(a) *Article 81 EC Requires FRAND Licensing*

Where standardisation involves a collaborative process that restricts competition (for example, by eliminating inter-technology competition), Article 81 EC will be infringed unless the conditions for exemption under Article 81(3) EC are satisfied, ie the standard contributes to economic progress, allows a fair share of the benefits to pass to consumers (eg reasonably priced downstream products) and does not impose restrictions unless these are indispensable to realising any economic benefits. Most importantly, the standard setting arrangements must not afford the possibility of eliminating competition in the downstream product markets and therefore the patents essential to the standard must be licensed on FRAND terms. This principle is clearly set out by the European Commission in its Horizontal Cooperation Guidelines³⁵ and has been applied by the Commission in practice.³⁶ These principles have also been generally applied, for example, in the context of patent pool agreements.

In the event that an essential patent owner seeks to impose terms on licensees that are not consistent with its FRAND commitment, all the parties to the standard will potentially be in breach of Article 81(1) EC. In normal circumstances, the remedies for an infringement of Article 81(1) EC will include avoidance of the relevant arrangements, as well as potential fines and damages claims. However, it is clear that declaring void the standard setting arrangements due to the actions of one or a small group of parties many years after a standard has been implemented would not be an effective remedy where SSO members have already sunk millions of euros in developing and implementing standard-compliant products (and are therefore locked in). Those investments have been made on the assumption that essential patent owners would respect their commitments to license on terms that are compatible with Article 81(3) EC. The appropriate remedy in these circumstances is the enforcement of the FRAND commitment given by the essential patent owner and this is best achieved through the application of Article 82 EC.

³⁵ “To avoid elimination of competition in the relevant market(s), access to the standard must be possible for third parties on fair, reasonable and non-discriminatory terms”, para 174 of the Commission’s Horizontal Cooperation Guidelines. See also para 152 of the Commission’s Technology Transfer Guidelines 2003.

³⁶ See, eg IGR Stereo Television and Salora, Eleventh Competition Policy Report, 1981, 94–95.

(b) *Article 82 EC Requires FRAND Licensing*

Article 82 EC applies to the unilateral conduct of a dominant firm: “standardisation can confer market power on a company whose patent has been incorporated in a standard when it is commercially indispensable to comply with the standard in question, and when there is a lock-in to the standard”.³⁷

In the context of global wireless telecoms standards, this is invariably the case. Once mobile telecoms operators have built their networks in accordance with a particular standard, the costs of switching to a different standard are very high. Telecoms operators are therefore locked into a standard once they have invested in the relevant infrastructure.³⁸

As a result of the market power that is gained or enhanced through the incorporation of patented technology into a standard, a company acquires “a special responsibility not to allow its conduct to impair genuine undistorted competition”.³⁹ Once a patent becomes essential, access must be provided for downstream companies to be able to manufacture products that comply with an industry standard.

The FRAND commitment not to exploit the additional market power that may arise from inclusion in a standard reflects the requirements of Article 82 EC, which expressly includes the following examples of abuse: “directly or indirectly imposing unfair purchase or selling prices or unfair trading conditions” (“fair and reasonable” components of FRAND) and “applying dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage” (non-discriminatory component of FRAND).

2. Strong Policy Reasons for Intervention

The European Commission has acknowledged the increasing importance of standards in the global economy.⁴⁰ European-wide standards have for many years been a cornerstone of a single European market. The establishment of

³⁷ C Madero Villarejo and N Banasevic (DG Competition), “Standards and Market Power”, *Global Competition Policy*, May 2008, 3.

³⁸ *Broadcom Corporation v Qualcomm Incorporated*, Case No 06-4292, United States Court of Appeal (3d Cir 2007), III.A.2.b.

“Although a patent confers a lawful monopoly over the claimed invention . . . its value is limited when alternative technologies exist . . . That value becomes significantly enhanced, however, after the patent is incorporated in a standard . . . Firms may become locked in to a standard requiring the use of a competitor’s patented technology. The patent holder’s IPRs, if unconstrained, may permit it to demand supra-competitive royalties.”

³⁹ Case 322/81 *NV Nederlandsche Banden-Industrie Michelin v Commission* [1983] ECR 3461, 57.

⁴⁰ See, eg the Commission Communication, “Towards an Increased Contribution from Standardisation to Innovation in Europe”, 11 March 2008, available at http://ec.europa.eu/enterprise/standards_policy/standardisation_innovation/doc/com_2008_133_en.pdf; see also the Council of the European Union’s conclusions on standardisation and innovation, available at http://ec.europa.eu/enterprise/standards_policy/standardisation_innovation/doc/councilconclusions_20080925_en.pdf (both last accessed on 19 June 2009).

European-wide standard bodies like ETSI has been strongly promoted by the European Commission who has also taken steps to ensure that these bodies comply with European competition rules.

Open standards depend on the enforceability of FRAND commitments (strong FRAND). If industry's confidence in open standards is undermined by spiralling royalty costs, the European economy will suffer as operators decline to invest in the costly infrastructure required to bring in faster and more varied services. Confidence in other standard setting activities will also falter.

Moreover, Commission officials told ETSI members when the UMTS standard was being chosen that the EU Commission would be prepared, in the appropriate circumstances, to apply EU competition rules to prevent standard abuse, stating:

“Competition rules may become applicable when the holder of a UMTS Essential IPR or a group of UMTS IPR holders occupy a dominant position in respect of the IPRs necessary to comply with the UMTS standard: Should abuses occur, the Commission will consider which appropriate action to take in enforcement of Community law and in support of EU policy . . .”⁴¹

3. Consumers Will Suffer Substantial Harm Absent Intervention

Unfair, unreasonable or discriminatory licensing terms regarding patents that are essential for the implementation of telecoms standards can cause direct and indirect consumer harm.

The impact of standardisation abuse on consumer welfare is likely to be substantial in the mobile telecoms industry due to the large market for handsets and the longevity of the standards that are implemented. Excessive royalty rates will result in increased prices for consumers.⁴² Since approximately one billion handsets are sold globally every year, the consumer harm from excessive royalties can be expected to run to billions of euros.⁴³ By way of example, if some 500 million UMTS handsets are sold over a period at an average wholesale cost of €200 and handset manufacturers have had to pay 5% royalties above FRAND rates, consumers will be likely to pay €5 billion too much for their handsets. Even if handset manufacturers choose to absorb 50% of the excessive non-FRAND royalties, the consumer harm over the life of a telecoms standard will be likely to be many billions of Euros.⁴⁴

⁴¹ Meeting report for ETSI SMG 24 bis held in Paris on 28–29 January 1998.

⁴² Patent royalties which vary with the number of units sold (and with the value of the product sold) constitute variable costs for the handset manufacturers. These are generally passed on to consumers (at least in part) through higher prices.

⁴³ M Newman, “Qualcomm Competitors Say Royalties Mean Billions in Overcharges”, *Bloomberg News*, 8 October 2008.

⁴⁴ MLex has reported on the significant consumer harm created by Qualcomm's abusive royalty practices: mobile phone operators claimed this increased the price of mobile handsets and

Where the standardisation process is abused through the imposition of royalties well in excess of FRAND rates or other unfair exploitation by IP holders' of their market power, not only is consumer welfare likely to be reduced (through higher prices charged by manufacturers), but also manufacturers, who are often unable to pass on to consumers all non-FRAND royalties, are likely to be prejudiced.

Moreover, if such behaviour is allowed to go unchecked by competition authorities, similar behaviour by other essential patent holders could be encouraged, which in turn could cause aggregate royalty rates for a standard to rise substantially. This would affect both existing standardised technologies and those currently being developed (such as 4G).

Furthermore, such behaviour may have consequences for consumer welfare that go far beyond the immediate direct costs to consumers. It may undermine the credibility of standard-setting in general and thereby discourage innovation.

4. Need for a Precedent Set by the European Commission

There are at least three current complaints filed with the European Commission relating to standards abuse, of which two relate to the enforcement of FRAND commitments. More complaints are likely to be filed as more companies are set up with a view to buying a few patents and then imposing exorbitant rates on an industry that is locked into a standard. An urgent precedent is needed to deter such activity, which provides little, if any, benefit to consumer welfare and imposes high potential costs. A precedent is required to confirm what most telecoms industry participants have always believed—a FRAND commitment is a meaningful and real constraint on patent owners and can be enforced through the EU competition rules.

The European Commission is best placed to establish a clear precedent for the proposition that a flagrant breach of a FRAND commitment will amount to an infringement of Article 82. First, there is a real risk, absent European Commission action, that national courts will apply Article 82 in an inconsistent manner when essential patents are enforced. A clear precedent should be established by the European Commission, which sets out the general principles that can then be applied by national courts. Second, the Commission is often best placed to obtain evidence to assess the lawfulness of such conduct—the Commission can require third parties to provide confidential information of their licensing activities on a global basis. This kind of evidence is likely to be critical in determining what is a fair, reasonable and non-discriminatory royalty. A national court, in EU states where there is no discovery procedure, will not

ultimately delayed the roll-out of 3G technology. See, eg "Mobile Phone Operators Signal 3G Discontent in Qualcomm Probe", 26 January 2006, available at <http://www.mlex.com/Content.aspx?ID=29479> (last accessed on 19 June 2009).

possess the relevant documents. Even in a jurisdiction where there is disclosure such as England and Wales, it may be difficult to obtain disclosure of documents from third parties who are not involved in the proceedings before the Court. Third, the Commission has a growing experience of determining what is “fair and reasonable” in a number of different contexts, including IPR licensing. It has required companies in the past to provide licences on fair and reasonable terms.⁴⁵ Fourth, the Commission is well placed to interpret what is fair and reasonable because of its combined economic and legal expertise. A national court will not have the same expertise. Moreover, as guardian of the Treaty the Commission is best able to protect all EU consumers from standardisation abuse because it can take into account, in its substantive assessment and selection of appropriate remedies, the interests of all European consumers both under Article 81 and Article 82 EC.

J. HOW SHOULD THE “FAIR AND REASONABLE” PART OF FRAND BE DEFINED?

In approaching the task of defining what “fair and reasonable” means in relation to a particular standard, there are several workable benchmarks and principles that can be used, in particular:

- *ex ante* competitive rates;
- industry experience and expectations; and
- the contribution made to the standard.

1. *Ex Ante* Competitive Rate

Where there was a choice between alternative technologies for inclusion in a standard, FRAND royalty rates should be no higher than the competitive rate that would be charged by the owner of patented technology prior to the adoption of the standard (referred to as the “*ex ante*” rate) had a competitive process of selection taken place.⁴⁶ If a licensor seeks to charge a higher rate *ex post*, the difference is in principle attributed to the market power obtained

⁴⁵ Regarding Rambus, the Commission’s Statement of Objections concluded that the appropriate remedy would be that Rambus charge a reasonable and non-discriminatory royalty rate (MEMO/07/330), reflected in the subsequent commitments (see *supra* n 7). A reduced royalty rate was one remedy imposed upon Microsoft following the Commission’s 2004 Decision, which found that Microsoft had abused its near-monopoly market position (see IP/04/382 and IP/07/1567).

⁴⁶ See, eg Farrell *et al*, *supra* n 34, III.C; J Farrell and C Shapiro have recently been appointed senior economic advisers to the Federal Trade Commission and Department of Justice respectively under the new Obama administration. See also D Swanson and W Baumol, “Reasonable and Non-discriminatory (RAND) Royalties, Standards Selection, and Control of Market Power” (2005) 73 *Antitrust Law Journal* 7ff.

through standardisation. The FRAND commitment is designed to prevent the licensor from exploiting the market power obtained through standardisation in such circumstances. Basic economic principles and common sense indicate that the competitive rate should be no higher than the difference in value between the chosen technology and the next best technical substitute.⁴⁷

However, there are difficulties in establishing competitive auctions⁴⁸ between technologies in a standard setting environment. Standards in the telecoms and other industries are often developed piecemeal and not through the selection of “off-the-shelf” technologies. Much of the innovation is carried out in parallel with the development of the standard: a technical issue is defined, participating businesses carry out research to address the issue, they file related patent applications and then file proposed technical solutions to the standards bodies. The best solution is chosen on technical grounds by standard setting committees, where all stakeholders are typically represented. This involves an ongoing process of collective development which is ill suited to an auction involving price competitions and other commercial considerations. The process is already laborious—a detailed standard such as GSM or UMTS involves thousands of technical decisions. A competitive auction involving price competition cannot be introduced into this model of standard setting—including commercial considerations into standardisation would risk slowing down and rendering even more complex what is already a difficult, time consuming and burdensome process. Moreover, at the time a standard is first selected, much of the standardised technology is likely to be the subject matter of patent applications. It is difficult to predict who the eventual owners of the relevant essential patents will be until the patents are granted and are analysed to see if the granted claims read on the chosen standard.

However, there are a number of proxies that can be used as benchmarks to help define an *ex ante* competitive FRAND rate in the absence of a competitive auction:

(i) Strength of Competitive Alternative Technologies

Applying the *ex ante* competitive benchmark, it is relevant to examine whether the SSO in question could have chosen alternative technologies in which the relevant licensor did not have any patents or at least an equivalent portfolio of patents. So, for example, if it can be shown that there are several technologies owned by

⁴⁷ See, eg Farrell *et al*, *supra* n 34, II.A.

⁴⁸ Evidence of a competitive *ex ante* rate, and therefore what may be “fair” and “reasonable” may be found where there has been a formal *ex ante* auction, as argued by Swanson and Baumol, *supra* n 46, 10. An *ex ante* auction is a competitive process where IPR owners theoretically have incentives to lower the cost of their respective technologies in order to obtain the rewards that would be expected to flow from the inclusion of their technology in the standard. Such an auction may be expected to result in a truly competitive rate, with the best and cheapest solution being selected for the standard.

others (or patent royalty free) that were regarded as close substitutes of the chosen technologies, this suggests that the FRAND rate should be low.

(ii) *Importance of Statements Made by Licensors Ex Ante*

If licensors make statements prior to the adoption of the standard to the effect that they will not charge a rate higher than a certain level, these can be taken into account in determining a FRAND rate. These statements become in effect binding maximum levels of royalties that can be charged. The industry can be assumed to have relied on such statements in choosing a standard.

However, declarations can also be inconsistent with FRAND rates even if made *ex ante*. A patent owner could, for example, claim a wholly excessive rate out of all proportion with the importance of its patents. This risk is not theoretical.⁴⁹ At the time when a standard is selected, most industry participants will typically not know the relative strengths of the patents held by any innovator and cannot therefore assess properly the fairness or reasonableness of any *ex ante* declaration. The SSO may therefore in practice rely more on the FRAND declaration rather than the absolute level claimed *ex ante* by any potential licensor.

(iii) *Ex Ante Licensing Negotiations*

In certain cases, the relevant licensor may have negotiated certain patent licences before the standard was adopted. These negotiations may well provide helpful contemporaneous evidence of what licensors and licensees thought the competitive rate was (assuming there were *ex ante* technical alternatives to the chosen technology).

2. Industry Experience and Expectations

Highly relevant to the definition of a FRAND rate is industry experience and expectation.⁵⁰ When a licensor makes a declaration that it will grant licences that are fair and reasonable, that statement has to be assessed in the light of what a reasonable licensee would have expected at the time. Relevant evidence in this category could include royalties paid by licensees for the previous generation of standard (royalties payable for 2G technology could be benchmark to establish FRAND rates for UMTS/3G) as well as royalties charged by the

⁴⁹ See *supra* n 27.

⁵⁰ One relevant consideration in assessing whether conduct by a dominant company is anti-competitive is “how far the conduct in issue is normal industry practice or, on the contrary, is exceptional and plainly restrictive of competition”. Therefore, a dominant undertaking’s behaviour may be considered abusive when it cannot be deemed as normal competition or reasonable steps to protect its own commercial interests. P Roth and V Rose (eds), *Bellamy & Child, European Community Law of Competition* (Oxford University Press, 2008), 947.

same licensor for patents that are essential to other comparable telecoms standards.⁵¹ Also relevant will be what other patent owners are charging for their patent portfolios that are essential to the same industry standards. Although all essential patents are complements, they are all equal in that an owner of any essential patent can prevent the manufacture and sale of the standardised product. If an owner of one or two patents that are ostensibly no more valuable than any other essential patent seeks to license those patents at a royalty rate several times higher than the royalties charged by major patent portfolio owners who have been principally responsible for developing a standard, these are relevant facts that can be taken into account.

Moreover, if the relevant SSO has commissioned a study of what royalties should be charged for a given standard and this is published before the standard is adopted, this could also provide important contemporaneous *ex ante* evidence of the SSO's expectations of what a FRAND rate should be.⁵²

3. Principle of Contribution

A FRAND rate should in particular reflect the level of contribution made by the essential patent owner to the standard in question. This has been accepted by many leading economists. Where many companies have contributed to a standard, this exposes the affected industry to the risk of "hold up" and royalty stacking which FRAND is designed to address. Consequently, a FRAND rate must take into account: (i) the extent of each patent holder's contribution to the standard; (ii) that there are a number of other essential patent owners; and (iii) that the aggregate rate must be reasonable.⁵³

This approach towards establishing a FRAND rate is consistent with industry practice.

A widely accepted benchmark in the mobile telecoms industry for determining whether an offered royalty rate for an essential patent is FRAND compliant are the principles of:

- reasonable aggregate rates (aggregated reasonable terms (ART)); and
- proportionality.⁵⁴

⁵¹ The European Courts and Advocates General have provided guidance on the meaning of "unfair terms" in case law. In particular, they have used various factors to determine the unfairness of a dominant undertaking's prices and have ruled that the pricing by a dominant undertaking is unfair where it "differs appreciably" from relevant comparators, such as the prices charged by the dominant undertaking in related markets or by its competitors. For example, in Case 27/76 *United Brands v Commission*. See also the *Tournier* case (Cases 110/88, 241/88 and 242/88) and Case 226/1984 *British Leyland*.

⁵² See, for example, the report by the UMTS IPR Working Group presented to 3GPP entitled "Third Generation Mobile Communications: The Way Forward for IPR", dated January 1999.

⁵³ See eg Farrell *et al*, *supra* n 34, III.C.4.

⁵⁴ See, eg the joint declaration made by leading ETSI participants on 6 November 2002, "NTT DoCoMo, Nokia, Siemens and Japanese manufacturers Reach a Mutual Understanding to

There is also judicial support for these principles from leading courts in the European Union.⁵⁵

(a) *ART*

Firms which commit to FRAND terms and conditions recognise the need for moderation of royalties in order to realise the efficiency gains of standardisation for the benefit of the industry and consumers. If the royalty levels are cumulatively too high, this may negate the economic benefits of standardisation. If IPR owners fail to maintain their royalty claims at a level that makes the IPR burden affordable, the standard may not be implemented at all. Therefore, it is important when negotiating royalty rates that individual licensors take into account the cumulative royalty levels payable by licensees.

The principle of reasonable aggregate royalty rates requires the overall cumulative royalty for a standard to be commercially reasonable and licensors of essential patents to take into account the overall licensing situation (including the cost of obtaining all necessary licences from other relevant patent-holders) for all relevant technologies in the end product. In other words, the reasonable aggregate royalty concept is intended to eliminate the Cournot inefficiencies that are inherent in collective standard setting involving many IPR owners.

(b) *Proportionality*

The principle of proportionality is a guide for understanding—in a bilateral negotiating context—that each patent owner’s individual entitlement to royalties *ex post* should be reasonable in light of the proportional contribution of that patent owner’s essential patents compared to the total contribution of all other essential patents reading on the standard. Proportionality is not a simplistic numerical equation nor does it involve a lowest common denominator approach.

Proportionality is a common sense reflection of the fact that *ex post*, each technically essential patent reads on the standardised product and that each such patent therefore has the same theoretical blocking power over the production and sale of the standardised products. Absent objective justification, no owner of

Support Modest Royalty Rates for the WCDMA Technology Worldwide”, available at <http://www.umts-forum.org/>. See also the joint press release of 14 April 2008 by Alcatel-Lucent, Ericsson, NEC, NextWave Wireless, Nokia, Nokia Siemens Networks and Sony Ericsson, “Wireless Industry Leaders Commit to Framework for LTE Technology IPR Licensing”, available at <http://www.ericsson.com/ericsson/press/releases/20080414-1209031.shtml> (both last accessed on 19 June 2009). In September 2006 the Minimum Change Optimum Impact Proposal (MCOI Proposal) was submitted to ETSI by Ericsson, Nokia and Motorola. The key elements of the MCOI Proposal are (i) the codification of FRAND by incorporating the principles of Aggregated Reasonable Terms and Proportionality; (ii) enhanced transparency of essential patents; and (iii) early visibility of relevant patents.

⁵⁵ For example the District Court of Dusseldorf in the *Siemens v Amoi (Zeitlagenmultiplexverfahren)* case, 13 February 2007. See also *Nokia Corporation v Interdigital Technology Corporation* [2007] EWHC 3077.

essential patents should extract a disproportionate share of a reasonable aggregate rate in the expectation that other licensors will accept a reduced share in order to keep the aggregate licensing burden low enough to facilitate adoption and implementation of the standard.

The number of essential patents in a portfolio is a relevant starting point in assessing the value and strength of a portfolio.⁵⁶ Although counting is a crude method, it is the only practical method for assessing relative contribution when a large number of patents need to be evaluated. Appropriate adjustments should also be made to reflect, for example, that a number of the patents in the portfolio may be about to expire or be limited to certain territories. Numerous patents are granted in the US and are rejected by the European Patent Office or limited to certain more restrictive claims. Proportionality is both logical and relatively easy to administer once a number of independent patent landscape studies have been carried out on the patents declared essential to the standard.

Critics have failed to suggest a rational and workable alternative to proportionality for negotiating FRAND royalties across multiple patent owners in the context of complex standard setting processes (in particular where formal *ex ante* auctions may not be practicable).⁵⁷ Proportionality is a practical way of taking into account the royalties charged by different patent owners. It enables a patent owner to assess whether a proposed royalty would lead to an uneconomic aggregate royalty if the other owners of essential patents charged royalties on the same basis. Any patent owner that departs significantly from proportionality should have to produce an objective justification for doing so, and must have the burden of proof of justifying its position.⁵⁸

Moreover, the principles of reasonable aggregate royalty rates and proportionality are particularly suitable to dynamic standards. The proportion that is due to each IPR owner of the aggregate maximum rate can vary over time in accordance with ongoing R&D (and resulting essential patents) made by each contributor to new releases and patents that may be granted only after the standard has been adopted. These FRAND principles are sufficiently flexible to take into account *ex post* R&D and the delay associated with the patent application process, both of which are key features of dynamic telecommunications standards such as UMTS and GSM (which have been the subject of multiple releases over many years). A pure *ex ante* approach cannot achieve this flexibility.

⁵⁶ There is economic support for this approach from leading economists such as Farrell *et al*, *supra* n 34, III.C.4: "Without reliable information about the patents' relative importance, a natural if imperfect default is to divide up the aggregate royalty by the number of essential patents."

⁵⁷ It has been suggested that patent citation analysis can be used to determine patent value. However, the number of times a patent is cited by other patents is in practice poorly correlated to value. For example, old expired patents are often cited frequently but have no value.

⁵⁸ C-395/87 *Ministère Public v Tournier* [1989] ECR 2521, [1991] 4 CMLR 248, para 38.

These principles can be applied not only *ex post* (when patent ownership is clearer) to determine a licensor's "fair" and "reasonable" share of a reasonable aggregate royalty rate, but also *ex ante* either in the context of private licence negotiations or as a benchmark for assessing whether the *ex ante* royalty declarations made by IPR owners are likely to be compatible with FRAND commitments.

For example, Ericsson and Nokia have each stated publicly that patents essential to standards should be widely available at fair, reasonable and non-discriminatory (FRAND) terms and that the aggregate reasonable rate for LTE (the proposed 4G technology standard) should not exceed 6-8% for handsets. Consistent with the principle of proportionality, Nokia and Ericsson have announced that they do not intend to charge more than would be consistent with their estimated share of all LTE-essential patents.⁵⁹

ART and proportionality are principles that have been applied successfully in the past in licence negotiations.

By estimating its proportionate contribution to the standard and applying the generally understood reasonable aggregate rate, each essential patent owner may establish its own reference rate based on the wholesale price of the relevant device. This standard royalty reference rate is often used as a starting point for negotiations with potential licensees. During the negotiations, each side may present to the other its core essential patents and relevant claims charts so that their validity and essentiality can be assessed. In dealing with each licence, each party may evaluate each other's patent portfolio and attempt to investigate and evaluate all relevant factors such as the importance of each party's patent portfolio relative to all the patents judged essential to the standard, the territorial application of the relevant patents and portfolio age considerations. The end result is a royalty rate set on terms which are fair and reasonable to each party (and non-discriminatory in that the reference rate should be the same starting point for all licensing negotiations and does not vary according to whether the licensee is a competitor in downstream markets).

⁵⁹ "[F]or the upcoming 3GPP Long Term Evolution (LTE) standard, Ericsson expects to hold a relative patent strength of 20–25% of all standard essential IPR. Ericsson believes the market will drive all players to act in accordance with these principles and to a reasonable maximum aggregate royalty level of 6–8% for handsets. Ericsson's fair royalty rate for LTE is therefore expected to be around 1.5% for handsets" (http://www.ericsson.com/technology/licensing_programs/index.shtml).

"Based on past experience, and the current level of technology investment, Nokia believes it will have 20–30 percent of all LTE standards-essential IPR. Subject to reciprocity, Nokia will license its LTE standards-essential IPR at prices that are consistent with the principle of proportionality and current best understanding of Nokia's share of all LTE standards-essential IPR. Currently, we expect Nokia's rate for devices that deploy LTE as the only wireless communication standard to be in a range of 1.5 percent from the sales price of an end-user device" (<http://www.nokia.com/A4993368>; both last accessed on 19 June 2009).

In cross-licensing agreements each party will notionally charge the other the FRAND rate, but these will net out so that in practice the net rate paid by one party to the other will be lower than if there were no cross-licence. These licensing practices are compatible with FRAND terms and have been widely used in cross-licensing negotiations.

In conclusion, the principles of ART and proportionality preserve the incentives to innovate *ex post*, do not depend on the availability of evidence of *ex ante* competitive rates (which may not be available due to confidentiality restrictions in license agreements), limit the aggregate rate that will be charged for a standard-compliant product, promote market entry, operate as a fair system of allocation of royalty payments between multiple patent owners, and are simple principles that can be readily applied by competition regulators and the courts.

K. THE ARGUMENTS AGAINST ART AND PROPORTIONALITY

ART and proportionality have not been unanimously accepted.⁶⁰ It has been argued that the principles of ART and proportionality are prescribed formulae that would arbitrarily limit the value of standards essential patents, discourage innovation, encourage the filing of marginal patents, complicate and delay the standardisation process, be impossible to implement in practice, be subject to exploitation by vertically integrated companies and ignore a patent's relative value.

1. Prescribed Formulae

ART and proportionality are not rigid, prescribed mathematical formulae but are guiding principles based on simple concepts which can be used by all potential licensees and licensors—and are used by many—as a flexible framework for establishing predictable and more transparent maximum aggregate costs for licensing intellectual property rights.⁶¹

2. Arbitrary Limitations on the Value of Standards Essential Patents

The aggregate rate would not be arbitrary if it is based on *ex ante* documentation as to what the industry expected the aggregate rate to be. This *ex ante* expectation should reflect the competition that existed from comparable technologies before

⁶⁰ See, eg Qualcomm's LTE/WiMax Patent Licensing Statement (December 2008). Also DL Martin and C De Meyer, "Patent Counting, a Misleading Index of Patent Value: A Critique of Goodman & Myers and its Uses", available at: <http://ssrn.com/abstract=949349> (last accessed 8 July 2009).

⁶¹ See the joint press release of 14 April 2008 by Alcatel-Lucent *et al*, *supra* n 54.

adoption of the standard. The reasonable aggregate rate should also be consistent with the aggregate rate charged for comparable standards.

3. Discourage Innovation

Application of the principles of ART and proportionality by all industry participants will encourage rather than discourage innovation. The greater the R&D effort, the more important the contribution to the standard, the greater the essential patent portfolio and the greater potential for licensing revenues. Although the relationship between the R&D effort and the number of valid essential patents may not be linear, the two are likely to be correlated. By rewarding innovation *ex ante* and, importantly, *ex post*, ART and proportionality encourage innovation. These principles enable licensors to allocate royalties on a fair and reasonable basis according to the contribution made.

4. Do Not Reward “Pure Innovators”

Some parties claim the application of these principles fails to provide incentives for non-vertically integrated companies, which cannot extract profits from downstream standard compliant products.⁶² However, where companies provide a commitment to license their patents on FRAND terms, it cannot be justifiable to discriminate in favour of or against “integrated companies” or indeed “pure innovators” when it comes to assessing what constitutes a fair and reasonable royalty rate. First, as discussed above, the FRAND royalty is the royalty that a licensor could have demanded *ex ante*. The *ex ante* rate is determined by the value of the technology in question relative to the next best alternatives available, and therefore does not depend on whether the licensor has downstream operations. Secondly, all licensors should share the common goal of a successful downstream market since this should result in a wider application of the standard and greater licensing revenues. Integrated and non-integrated companies must be treated on a non-discriminatory basis according to their contribution to the standard. The interests of innovators are better served by a system that encourages innovation—the greater the innovation the greater the share of royalty revenues. The interests of innovators cannot be best served by varying the royalty entitlement according to whether the licensor has downstream operations. A vertically integrated innovator that could have been the lead innovator in relation to a particular standard should be rewarded in a manner commensurate with its contribution to the standard irrespective of its business model. Provided licensing is non-discriminatory as required by a FRAND commitment, downstream competition will deliver competitive outcomes and margins of vertically integrated

⁶² See Geradin and Rato, *supra* n 26, 33–35.

downstream operators should be determined by the efficiency of their downstream operations and not by whether they are in common ownership with a licensor of essential patents.

5. Encourage the Filing of Marginal Patents and Over-Declarations

Some innovators seek to file marginal patents of dubious validity and over-declare their essential patent portfolios in order to deceive potential licensees and extract royalty rates that do not reflect the true value of the contribution made by their R&D and of their patent portfolio. It may well be the case that certain patent authorities grant patents too readily and some innovators may over-declare. However, the incentives to file marginal patents and over-declare already exist. The filing of marginal patents and over-declarations can best be dealt with through more rigorous enforcement by SSOs of requirements for innovators to indicate in each declaration the relevant part of the standard to which a technology applies. With more transparent patent declarations, patent owners will be less likely to effectively “game” the open standardisation process since it will be easier to eliminate marginal non-essential patents during licensing negotiations.

6. Complicate and Delay Standardisation

It is difficult to see how the application by licensors and licensees of the principles of ART and proportionality would complicate and delay the standardisation process. As explained above, the principles are a clear and simple framework that can be applied *ex post* by all industry participants (irrespective of their means) in order to facilitate licence negotiations and ensure that innovators are not able to exploit unfairly the market power gained as a result of standardisation.

Moreover, the application of the principles of ART and proportionality takes place in the context of licence negotiations. It does not interact with, and is wholly separate from, the standardisation process.

7. Impossible to Implement in Practice

As described above, the principles are a clear and simple framework that can be applied by all industry participants and indeed have been applied successfully in the past.⁶³ They can also be applied by the courts and national competition authorities.

⁶³ As applied, for example, by Nokia and Ericsson; see, eg the LTE press releases referred to in n 59 *supra*.

L. CONCLUSION

In summary, it is critically important to the success of open standardisation as a whole that FRAND commitments are enforced by competition authorities, endorsing clear, justiciable principles that will assist in the interpretation of the FRAND concept.