



Supplementary Submission of Industry and Market Analysis on Intellectual Property in Mobile Communications Standards

Response to FTC Request for Comments on the Practical and Legal Issues Arising from Incorporation of Patented Technologies in Collaborative Standards

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1 Introduction to Supplement

This report is my supplement to a June 15, 2011 submission in response to the Federal Trade Commission's request for comments on "the practical and legal issues arising from the incorporation of patented technologies in collaborative standards"¹. My initial report was entitled "A Compendium of Industry and Market Analysis Articles on Intellectual Property in Mobile Communications Standards"². The Compendium comprises three articles published on the IP Finance blog and this Supplement comprises the two articles I have published there since then³.

Several IP Finance readers from various major technology companies have encouraged me to submit my articles in response to the FTC's request for comments. For example, a Director of Standards at one of these companies wrote to me after reading the first two articles stating I have "done a great job in these two posts dispelling some of the unsubstantiated myths around the use of patents in the standards context". He went on to write that "the FTC RFI actually asks questions that are clearly and concisely answered by your two blogs (and I suspect your third blog on upstream royalties and downstream benefits will address a couple more)". He expressed his concern that whereas many academics believe "hold up was a real problem, but those from industry maintained that hold up was a theoretical problem created by academics".

I present these articles in my Compendium and Supplement as an industry expert who knows the IT and telecom industries and markets, including the IP-rich 2G/3G/4G communications sector, particularly well. Cellular communications began 30 years ago and (F)RAND-based licensing has prevailed in the last decade with introduction of 3G technologies including WCDMA and CDMA2000. The FTC should consider all the well-established facts and trends with the enormous successes achieved in mobile communications and with other (F)RAND-based technologies, such as in video and audio codecs. With sustained innovation, vibrant competition,

¹ <http://www.federalregisterwatch.com/info/federal-register,ftc,request-comments-announcement-workshop-standard-setting-issues/77859>

² This report is also available on the WiseHarbor web site: <http://www.wiseharbor.com/pdfs/Mallinson-WiseHarbor-FTC-IP-in-standards-submission-12June2011.pdf>

³ "Where money issues meet IP rights". This weblog looks at financial issues for intellectual property rights: securitisation and collateral, IP valuation for acquisition and balance sheet purposes, tax and R&D breaks, film and product finance, calculating quantum of damages--anything that happens where IP meets money. Publication web site: <http://ipfinance.blogspot.com>



disruptive market entry, declining prices and consumer benefits so clearly increasing over many years, the FTC should demand clear evidence before embracing unsubstantiated theories alleging market failure or harm.

As an industry analyst with 25 years experience in mobile communications technologies and services, I was invited by IP Finance to write a series of articles on the “pricing of patented IP that is to be included in standards governed by FRAND principles”. Further details on my experience, including listings and links to many other published articles, can be found in Section 4 of this Supplement and on the WiseHarbor web site at www.wiseharbor.com.

This Supplement comprises my fourth and fifth articles for the IP Finance blog. In the fourth article (reproduced here in Section 2) I use a financial model I have created and calibrated with product market share and “essential IP” declaration figures to quantify the effects of proposed aggregate royalty rate capping on various types of market participant including horizontal licensors, vertically-integrated manufacturers and manufacturers without IP to cross license. I also examine patent pools as a commonly proposed means of reducing or minimising aggregate royalties. Whereas voluntary patent pools have sometimes had beneficial results, major players typically shun them for the most complex technologies such as in 3G and 4G mobile communications. Pools should never be imposed because this would eliminate significant competition that originates from outside pools; mandatory pools with royalty caps would be anticompetitive.

My most recent IP Finance posting (reproduced here in Section 3) focuses on comments made by Joseph Farrell, the FTC’s Bureau of Economics Director, in his presentation closing the all-day workshop held as part of the FTC’s consultation on the practical and legal issues arising from the incorporation of patented technologies in collaborative standards⁴. He described the FTC as sole representative for consumers in the debate because consumers are notably absent from the table in standards setting organisations, in licensing discussions and at this workshop. He asserted that suppliers are somewhat indifferent to the alleged hold-up because its costs are simply being passed on in elevated consumer prices. Significantly, he offered no evidence on the extent to which any cost savings in IP fees would actually be passed on to consumers and provided no indication of consumer harm versus the benefits that accrue to consumers from IP-owners generating a reasonable risk-

⁴ This FTC workshop was streamed and is archived online: http://htc-01.media.globix.net/COMP008760MOD1/ftc_web/FTCindex.html#June21



adjusted return that can be reinvested in further innovation. In addition to identifying major shortcomings with the proposed “remedy” of introducing *ex-ante* auctions to fix the alleged “hold-up” pricing, I present recently published market development data from an FTC sister agency, the Federal Communications Commission. It clearly shows a dynamic and flourishing mobile phone market in the US—particularly in smartphones—with significantly increasing consumer choice in manufacturers and handset models. Purchasing patterns show that most of the US population choose to replace or upgrade their phones as frequently as every year or two. Phones do not wear out like a pair of shoes. Consumers keep replacing their phones so frequently to benefit from successive innovations. I also illustrate that a significant proportion of consumers are most willing to pay a substantial premium to obtain the most innovative and feature-rich devices.

My contributions to IP Finance are introduced and edited by Jeremy Phillips⁵. These articles are included as originally published by IP Finance, with the addition of some footnotes for readers who are reading from paper and are unable to “click” the embedded hyperlinks.

My future articles on IP Finance will examine other aspects of (F)RAND licensing, alleged threats and harm from non-practicing entities, open source software supply and other issues with standards-based licensing.

⁵ Founder/manager, [IP Finance](#) weblog (since January 2008)
Intellectual Property Consultant, [Olswang](#), solicitors (since June 2007)
Director of Research, Intellectual Property Institute (since January 2007)
Professorial Fellow, Queen Mary Intellectual Property Research Institute (since 2007)
Editor, Journal of Intellectual Property Law & Practice (since 2005)
Founding co-blogger and current blog team member, [IPKat](#) intellectual property weblog (since June 2003): <http://www.jeremyphillips.eu/>



2 Fixing IP Prices with Royalty Rate Caps and Patent Pools

Tuesday, 5 July 2011

This is the fourth in a series of features written by [Keith Mallinson](#) (WiseHarbor) for IP Finance. In this piece, Keith contrasts different structures for establishing the price paid for use of IP in the context of essential standards and concludes that, while voluntary patent pools have sometimes had beneficial results, pools should never be imposed because their imposition would eliminate significant competition from originates from outside pools; mandatory pools with royalty caps would both be anticompetitive and impede competition.

"Fixing IP Prices with Royalty Rate Caps and Patent Pools

Whereas voluntary patent pooling is common in licensing standards-essential IP for digital audio and video, attempts to *impose* pooling on licensing complex products, which include multiple standards and many more patents, are ill-suited and potentially anticompetitive. Some companies may voluntarily form patent pools for any particular standard, but mandatory patent pools seeking to limit licensing fees would distort competition by favouring downstream licensees at the expense of upstream licensors who depend on licensing fees to fund their R&D. IP owners, including vertically-integrated companies which combine downstream product businesses with upstream technology licensing, generally prefer bilateral agreements for IP-rich products such as mobile phones. Unlike patent pools, bilateral licenses most frequently include technologies for several standards and other IP, whereas each pool may only include essential patents for just one standard. Technology and market developments are best when competition facilitates various business models and licensing practices. And that also benefits consumers.



Licensing Cartels: From Monopoly to Monopsony

There is a long history of patent pools being [used to monopolise markets](#)⁶, excluding competitors and controlling prices in several cases.

Adam Smith and others typically depict price fixing as conspiracy against the public to raise prices. However, there is another way to fix prices: collusion to reduce prices paid to suppliers. Forcing technology input prices lower would starve upstream technology developers of the profit margins required to sustain employment, reinvestment and their output in technology development. Ultimately this would be to the detriment of consumers who benefit from rapid and dynamic innovation in ICT and elsewhere. Reduced licensing fees do not guarantee lower consumer prices. With concentration in supply downstream, manufacturers may take the savings in profits.

Nevertheless, calls for mandatory or strongly encouraged participation in ICT patent pools are an increasing trend—typically from downstream licensees and their customers—with the self-serving objectives of limiting their input costs. Some well-intentioned policy makers also mistakenly regard patent pools as a panacea for supposed problems with complex patent landscapes and patent quality.

In-licensing requirements highest among those with most IP

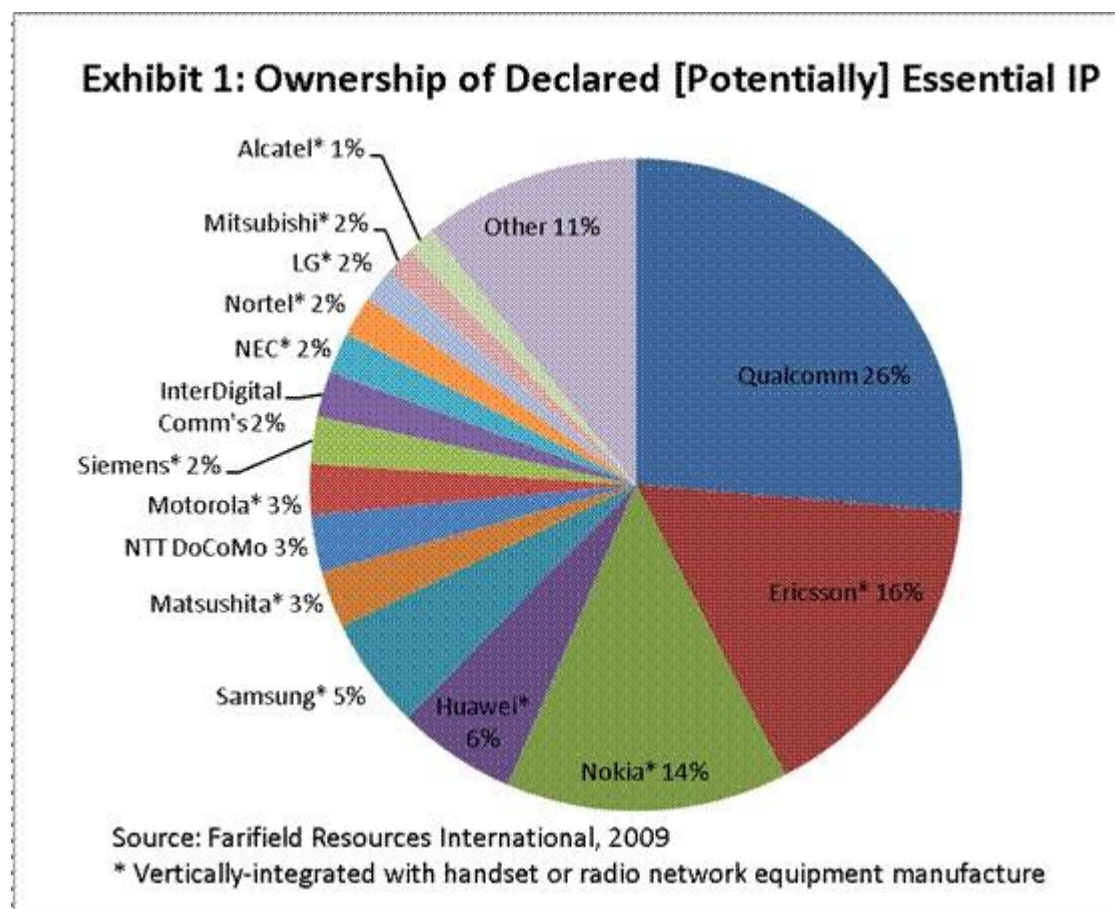
Manufacturers with little or no IP and vertically-integrated companies with extensive IP are all dependent on in-licensing for most IP required in today's ICT products, such as mobile phones. Technology ecosystems are complex webs including those who create new technologies and those who implement them in products. No handset manufacturer has declared more than a small minority of the IP required to implement 3G cellular. Technologies developed by scores of different companies are shared in implementation by hundreds of downstream manufacturers.

Exhibit 1, based on data from a 2009 study funded by Nokia, shows that leading implementers Ericsson, in radio network equipment, and Nokia, in handsets, declared IP ownership amounting to 16% and 14% respectively of the total for 3GPP mobile communications standards with WCDMA. Leading technology and chipset provider Qualcomm declared 26% ownership. (Many have claimed the study methodology is flawed. The input data is used here to demonstrate the well accepted fact that many companies have patents

⁶ Survey of Patent Pools Demonstrates Variety of Purposes and Management Structures, David Serafino, June 2007: <https://www.law.berkeley.edu/files/ds-patentpools.pdf>



related to these standards).



With the need to in-license most essential IP, it is no surprise—with self-interest rather than altruism—manufacturers and their downstream customers (mobile operators who in many cases subsidise handset prices to consumers) have striven to limit aggregate licensing fees. A common proposal from several mobile operators is to limit aggregate essential-IP charges by establishing an LTE patent pool with that specific objective. For example, would-be pool administrators Via Licensing and SISVEL have **promoted themselves and pooling**⁷ over the last two years by scaremongering about the threat of so-called royalty stacking. In one

⁷ SISVEL presentation, April 2011: http://ec.europa.eu/dgs/jrc/downloads/events/20110428-tto-circle/jrc_20110428_tto-circle_brufani.pdf



presentation, Sisvel nonsensically **projected WCDMA royalties**⁸ at twice average wholesale prices. I analysed aggregate royalty levels in my last posting **here**⁹ and concluded that aggregate fees are modest and merited by those that invest significantly in risky R&D.

The European Commission **DG Comp's Draft Horizontal guidelines**¹⁰ recognise that vertically integrated companies that both develop technology and sell products "have mixed incentives". Companies with a significant share of a downstream manufacturing business generally face higher costs in licensing fees for the IP they do not own than they can generate in licensing fees from the IP they do own. This explains the 2008 attempt by Alcatel-Lucent, Ericsson, NEC, NextWave Wireless, Nokia, Nokia Siemens Networks and Sony Ericsson to cap below 10% aggregate royalties for handsets implementing the 3G/4G LTE standard, as **described** in my previous IP Finance posting.

Proposed caps are for aggregate maximum rates to be paid for all standards-essential patents owned by all patent holders. However, in practice, net royalty payments are zero or are minimized among vertically-integrated companies who cross-licence, with or without a cap – so a proposed cap would have little or no impact on licensing costs among such companies. The latter would greatly benefit from any reduction in upstream licensors' fees—payable by all licensees—whereas, any squeeze on their own charges would only be significant in the minority of the market where they are not cross-licensing to minimise or eliminate net payments. A manufacturer's IP fee income is generally small compared to its product revenues.

IP licensing, before and after imposition of an aggregate royalty cap, is depicted in Exhibits 2a and 2b respectively. In this simplified yet representative model, 75% product market share (applicable for handsets sold in 2010) is supplied by vertically-integrated manufacturers who minimise royalty charges among themselves. Product markets are predominantly supplied by those who hold significant essential IP—even

⁸ Article I wrote on patent pools in August 2010 as one of my monthly columns for trade publication FierceWireless: <http://www.fiercewireless.com/europe/story/mallinson-uncertain-outlook-patent-pool-licensing/2010-08-25>

⁹ All my IP Finance postings are available at <http://ipfinance.blogspot.com/>. My June 15, 2011 Compendium including my first three postings was submitted to the FTC for this consultation and is on the WiseHarbor web site: <http://www.wiseharbor.com/pdfs/Mallinson-WiseHarbor-FTC-IP-in-standards-submission-12June2011.pdf>

¹⁰ Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements: http://www.profbrugger.at/kartell/Texte/horizontal_guidelines_en_2010.pdf



excluding Apple, RIM and HTC who had no essential IP until after 2006, according to the source used in Exhibit 1. Manufacturers with the largest patent holdings also tend to have the largest shares of the downstream markets for which they need to license-in most IP. Smaller manufacturers with significant IP have negotiating leverage over larger players because the latter need licensing for relatively large shares and revenues in product markets. The remaining manufacturers, without IP, who account for the other 25% of market share, instead pay fees for all IP licensing required. Upstream licensors charge fees to all manufacturers downstream to fund R&D investments. Also consistently with declared IP ownership in Exhibit 1's source, it is assumed that manufacturers without IP to trade make one third of their out-payments to upstream licensors and the remainder to vertically-integrated players. As an example, the royalty cap modelled is an arbitrary reduction of one third to the aggregate royalty rate (as a percentage of handset prices). Total licensing fees paid, received, and reduced are proportional to the areas of the various coloured blocks on the two diagrams.



Exhibit 2a: Licensing Fees, without Cap, Paid by Handset Manufacturers

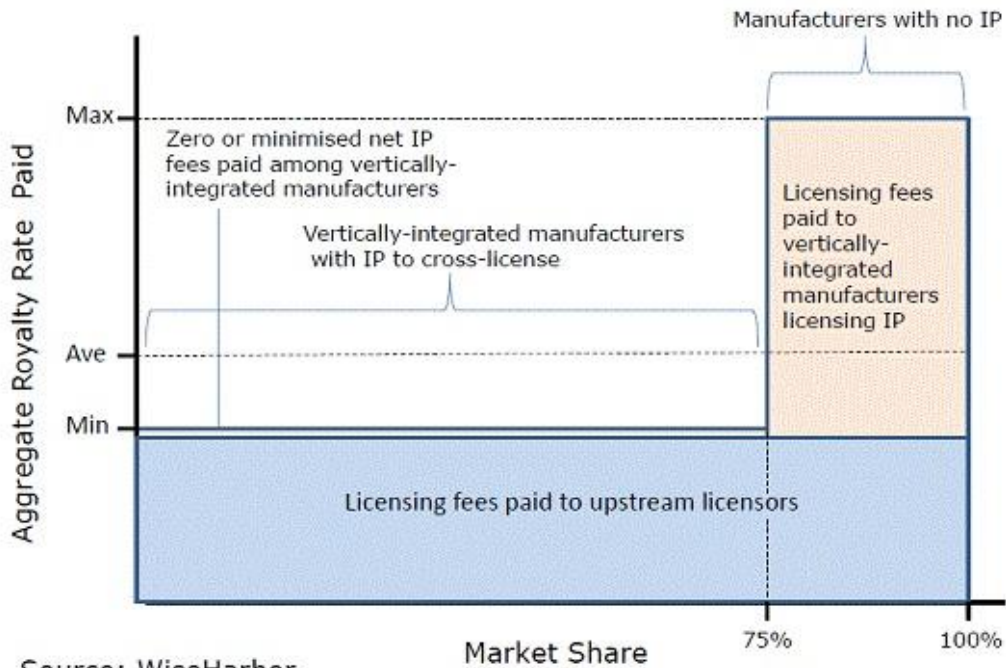
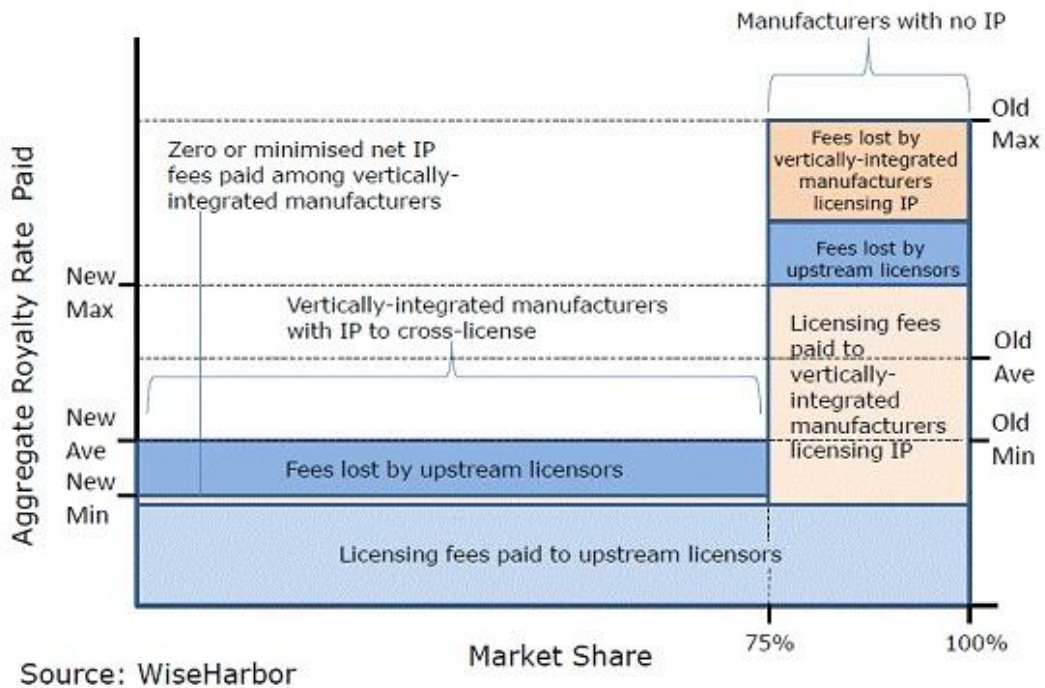


Exhibit 2b: Licensing Fees, with Cap, Paid by Handset Manufacturers



The result is that aggregate royalty rate caps save money for all downstream manufacturers at the expense of upstream licensors. Downstream manufacturers with no IP to trade save most significantly. In this model, vertically-integrated companies lose some revenue, but save significantly more in reduced expenses. For every dollar of licensing revenues they lose through any capping, they save \$1.50 in licensing out-payments to upstream licensors. Licensing fees to upstream licensors from all manufacturers fall in the same proportion.

Fish too big for the pool

Several voluntary patent pools established in the last decade or so have been quite successful. They have attracted many firms to join as licensees. This collective out-licensing is efficient because the pool administrator can serve as a distribution channel for many licensors and as a one-stop-shop, subject to the pool standard's limited scope and IP contributed, for licensees. [Research reveals](#)¹¹ that recent pools for audio and video codec standards-essential patents have attracted, in most cases, the majority of the standards-essential patents for those standards, including MPEG-4 with 34% of firms that have applicable patents contributing 89% of the required patents. This research also concludes that while a number of vertically-integrated companies who manufacture products implementing the standards are most inclined to join, many vertically-integrated and upstream essential-IP owners decide to stay out. Some IP owners find they can derive more value from bilateral licensing and cross licensing, or that pools do not provide sufficient freedom to pursue and defend their downstream businesses. Specific concerns include:

- The difficulty of determining how to share pool profits with thousands of patents, uncertainties around essentiality and the relative values among patents;
- Differing business models with upstream licensors and vertically-integrated manufacturers holding major proportions of essential IP;
- Asymmetries in patent ownership among these manufacturers and versus upstream licensors;

¹¹ To Join or Not to Join: Examining Patent Pool Participation and Rent Sharing Rules, [Anne Layne-Farrar](#) and [Josh Lerner](#), January 2008
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=945189



- The need to license devices for multiple standards with 2G, 3G, 4G, video, audio and for other technologies outside of the standards; meaning that bilateral deals, which can encompass all of a company's IP, are always going to be necessary, and are more flexible;
- The need to resolve significant patent litigation with fierce competition between vertically-integrated manufacturers and other end-user product manufacturers without standards-essential IP.

This is mostly achieved through bilateral settlements which likely would be extremely difficult if the companies had agreed to, or been forced into, patent pools. Pooling IP would surrender control of this most strategic asset for several major players; and mandatory pooling would expropriate this valuable private property. For example, it could have limited Nokia's ability to sue Apple for significant licensing fees in 2009, based upon Nokia's standards-essential WCDMA patents, and then expediently agree to settle for cash in face of counter-suits and deteriorating Nokia finances with a profit warning most recently. In contrast, the 3G Licensing pool has never sued for patent infringement. While announcing settlement of patent infringement litigation with Apple, **Nokia's CEO, Stephen Elop, stated**¹² that Nokia's cumulative R&D investment during the past two decades was Euro 43 billion (\$60 billion). This is largely justified by sales of its own products and by minimising aggregate royalty out-payments, stated to be **less than 3% gross to 2007**¹³, through bilateral licensing. Fees to be received in the cross-licensing settlement with Apple—now with revenue share close to market leading levels of Nokia and Samsung—were not disclosed. Whereas Google does not manufacture anything, HTC and Samsung are being sued by Apple for infringement, of patents that are not essential to the mobile standards, by their smartphone devices employing Google's Android operating system. Google made a stalking-horse bid of \$900 million for a portfolio of 6,000 patents, including essential IP, from bankrupt Nortel. The patents would have had great defensive value to Google, who makes its money from advertising in search on PCs and phones using its software and services, but has a limited patent portfolio. However, a consortium of Apple, Microsoft, Sony, Research In Motion, Ericsson, and EMC obtained Nortel's patents for \$4.5 billion. The consortium rules are unknown publicly, but

¹² Nokia June 2011 press release: <http://press.nokia.com/2011/06/14/nokia-enters-into-patent-license-agreement-with-apple/>

¹³ Nokia April 2007 press release: <http://press.nokia.com/2007/04/12/nokia-has-paid-less-than-3-per-cent-gross-royalty-rate-for-wcdma-handsets/>



presumably the members will be able to use the portfolio defensively in bilateral license negotiations and litigation settlement discussions.

Absent (misguided) regulatory fiat, there is no reason why an LTE pool would become any more significant than the unsubstantial and struggling WCDMA pool. Attempts in the early 2000s by the 3G Patent Platform Partnership (set up by some telecom companies as a voluntary pooling arrangement) to regulate 3G IP fees with collective licensing and a **"Maximum Cumulative Royalty Rate"**¹⁴ of 5% were unsuccessful. The WCDMA patent pool includes mainly mobile operators and Japanese manufacturers. It covers only around 10% of patents declared by the patent holders to be WCDMA standards-essential. Multimode, multi-media devices (e.g., smartphones, 3G tablets) are incorporating increasing numbers of cellular and other standards. Proposed LTE patent pools have also made little progress over the last couple of years for all of the same difficulties faced by the 3G patent pools.

No panacea

Manufacturers, including the vertically integrated with significant IP, have self-serving incentives to cap aggregate royalties. Caps would reduce downstream product licensing costs significantly more than they would reduce licensing revenues for the latter. However, these companies tend not to favour patent pools for other reasons. Unfortunately, the significant shortcomings are not recognised by many policy makers who mistakenly see patent pools as a panacea to solve supposed problems with complex patent landscapes. Voluntary patent pools have been beneficial in some cases, but patent pools should never be imposed because this would eliminate significant competition that comes from outside of pools. Mandatory pools with royalty rate caps would be anti-competitive and impede innovation".

¹⁴ Remarks by US Counsel for 3G Patent Platform Partnership on EC and DoJ Approval of the 3G Patent Platform in March 2003: <http://www.mondaq.com/unitedstates/article.asp?articleid=20207>



3 Collaborative standards for mobile technologies: a great deal for consumers

Thursday, 21 July 2011

The IP Finance weblog is delighted to host another guest piece by **Keith Mallinson** (WiseHarbor) on the issues raised by the inclusion of patented IP within industry standards. Do please let us have your comments: Keith is most willing to deal with them.

"A Great Deal for Consumers in IP

As indicated in my previous IP Finance postings **here**, **here**, **here** and **here**, mobile technologies, devices, networks and operator services are highly standards-based with essential-IP licensing predominantly and successfully based on a system of (Fair), Reasonable and Non-Discriminatory terms. My articles show extensive competition with significant new market entry, an effective and vibrant innovation ecosystem including Standards Setting Organisations such as **3GPP**¹⁵ in mobile communications (including partners **ARIB**¹⁶ in Japan, **ATIS**¹⁷ in the US and **ETSI**¹⁸ in Europe), modest aggregate royalty charges for essential IP compared to product and service expenditures, and declining consumer prices.



¹⁵ 3rd Generation Partnership Project: <http://www.3gpp.org/>

¹⁶ Association of Radio Businesses and Industries: <http://www.arib.or.jp/english/>

¹⁷ Alliance for Telecommunications Industry Solutions: <http://www.atis.org/about/index.asp>

¹⁸ European Telecommunications Standards Institute: <http://www.etsi.org/WebSite/AboutETSI/AboutEtsi.aspx>



Holding out against hold-up theories

IP finance readers encouraged me to submit my first three IP Finance postings to the US Federal Trade Commission in response to its [request](#) for information and comments on “the practical and legal issues arising from incorporation of patented technologies in collaborative standards”. In particular, the market facts-based analysis submitted in my [compendium of articles](#) counters FTC’s allegations of patent “hold-up” in its March 2011 [report](#)¹⁹ entitled *The Evolving Marketplace: Aligning Patent Notice and Remedies with Competition*. In this, it asserts that

... the patentee can use the threat of an injunction to obtain royalties covering not only the market value of the patented invention, but also a portion of the costs that the infringer would incur if it were enjoined and had to switch. This higher royalty based on switching costs is called the “hold-up” value of the patent. Patent hold-up can overcompensate patentees, raise prices to consumers who lose the benefits of competition among technologies, and deter innovation by manufacturers facing the risk of hold-up.

A Director of Standards at one major company wrote to me after reading my first two articles stating I had “done a great job in these two posts dispelling some of the unsubstantiated myths around the use of patents in the standards context”. He went on to write that “the FTC RFI actually asks questions that are clearly and concisely answered by your two blogs (and I suspect your third blog on upstream royalties and downstream benefits will address a couple more)”. He expressed his concern that whereas many academics believe “hold up was a real problem, but those from industry maintained that hold up was a theoretical problem created by academics”.

Resurrecting ex-ante licensing auctions

As part of the FTC’s consultation, it [streamed a public workshop](#)²⁰ it held on 21st June 2011. Divergent views were expressed in vigorous, balanced and exhaustive debate in three panel sessions by representatives from a wide variety of corporate interests on key matters related to the alleged hold-up including IP disclosure, RAND licensing terms and the use of

¹⁹ <http://www.ftc.gov/os/2011/03/110307patentreport.pdf>

²⁰ Archived video recording of the FTC workshop, June 2011: http://htc-01.media.globix.net/COMP008760MOD1/ftc_web/FTCindex.html#June21



injunctions. Joseph Farrell, the FTC's Bureau of Economics Director wrapped-up the all-day event with a closing presentation that provided no opportunity for further discussion. He presented the FTC as sole representative for consumers in the debate because consumers are notably absent from the table in SSOs, in licensing discussions and at this workshop. He asserted that suppliers are somewhat indifferent to the alleged hold-up because its costs are simply being passed on in elevated consumer prices.

Significantly, he offered no evidence on the extent to which any cost savings in IP fees would actually be passed on to consumers and provided no indication of consumer harm versus the benefits that accrue to consumers from IP-owners generating a reasonable risk-adjusted return that can be reinvested in further innovation. Instead, he proposed resurrection of the much-criticized [Swanson and Baumol](#)²¹ *ex-ante* auctioning approach, in which technology owners would offer their essential IP for inclusion in a standard in "sealed bid" process designed to ensure (the bizarre and unreasonable objective, in my opinion) that the IP price is no more than the incremental value over the price of the next best alternative (even if the latter is priced at zero by a vertically-integrated player seeking to minimise its downstream in-licensing costs).

In addition to numerous problems with that particular method of fixing prices, the evidence is that consumers are actually doing rather well with the efficient status quo in licensing IP. With standards of great complexity and involving hundreds or thousands of patents in mobile communications each covering different portions of each standard, it would be very cumbersome to administer IP auctions and there would be all manner of undesirable consequences. Whereas standards-based technologies are selected in a collective process on the basis of technical merit by a wide assortment of companies who generally negotiate licensing terms on a separate bilateral basis, auctions would constitute collusion among purchasers and would likely unduly emphasise IP price over other important factors (such as functionality, features, performance, and even total system cost and price to consumers). This would be anticompetitive for the same reasons that have prohibited other forms of collective price setting in various SSOs. Substituting the proposed auctions for outlawed collective negotiations

²¹ The Ex-Ante Auction Model for the Control of Market Power in Standard Setting Organizations, May 2007: Damien Geradin, Anne Layne-Farrar, A. Jorge Padilla: <ftp://ftp.cemfi.es/wp/07/0703.pdf>



neither eliminates nor diminishes the spectre of “monopsony”. Technology selection is a complex process that would be impaired with the rigidities of an auction. IP is most commonly priced on a portfolio basis with essential IP and other patents licensed in a bundle covering the complete implementation of the standard.

Licensees simply do not want to license only the patents covering a small portion of the standard if the licensor owns other patents that cover other parts of the standard; they need and want the entire bundle of essential IP. The IP price is just one among many factors included in licensing negotiations. Setting standards is not a one-off event; it is an evolutionary process including a succession of numerous incremental additions within standards such as GSM with GPRS and EDGE and within WCDMA with UMTS rev 99, UMTS rev 4, UMTS rev 5 etc to include technologies such as HSPA, and most recently within LTE. Various parties prioritise these factors differently in different bilateral negotiations which enable the most efficient outcomes for all in licensing agreements. In return for cross licenses, vertically-integrated manufacturers are incentivised to under-price for inclusion of their IP in standards, versus upstream licensors, because this would minimize their costs of having to license-in from others. Even Swanson and Baumol have expressed concerns that the opportunistic exploitation of *ex post* market power “will be magnified if the IP owner is also a participant in the downstream market”.

My [previous](#)²² IP Finance posting also illustrates the battle of business models between upstream licensors and vertically-integrated manufacturers. My analysis measures the financial incentives the latter have to minimise overall IP fees at the expense of the former. Competition between business models is a positive phenomenon that should be encouraged. Regulation to the benefit of one business model over another with royalty rate caps, for example, would stifle competition and innovation.

Minimising prices is not the be all and end all – for corporates or consumers – with other factors (such as features, performance, functionality, flexibility to upgrade services, and support) also very important. One interesting observation among panellists at the workshop was that, in some cases, would-be licensees would rather sign a royalty-bearing license than commit to other onerous conditions demanded in royalty-free licensing. Whereas consumers typically avoid paying more than single digit percentages over

²² Section 2 in this Supplement report and on the IP Finance blog: <http://ipfinance.blogspot.com/2011/07/fixing-ip-prices-with-royalty-rate-caps.html>



the odds for commodities such as petrol and electricity supply, they frequently choose to pay a significant premium for the most innovative products and brands. For example, Apple's iPhone has commanded a particularly high wholesale price of around \$600 (around double average selling prices for smartphone companies RIM and HTC) and **[a gross profit margin approaching 60%](#)**²³ on the strength of those factors. Typically, the price is heavily subsidised by mobile operators, but consumers pay over the life of their service contracts. Apple's profits fuel its spectacular innovation machine that has led to entirely new product categories with its iPods, iPhones and iPads in music devices, smartphones and tablets respectively, and that has created the supporting ecosystem with iTunes, its App Store and thousands of developers. Apple's high margins since introduction of the iPhone in 2007 have attracted plenty of competition, as illustrated in the following section, with "me too" and differentiated products at lower prices for those who are price sensitive. This also exerts downward price pressure on Apple.

Sister Act

The FTC's sister agency, the Federal Communications Commission, provides plentiful evidence that consumers are served very well with diverse choice in suppliers, handset models and with innovative new offerings in smartphones.

The FCC's fourteenth Annual Commercial Mobile Radio Service (CMRS) Competition Report, published one year ago, 'examined, for the first time, competition across the entire mobile wireless ecosystem, including an analysis of the "upstream" and "downstream" market segments, such as spectrum, infrastructure, devices, and applications'. **[The fifteenth report](#)**²⁴, recently published, "follows the same analytical framework". In this, it shows how consumer choice in handset devices has increased significantly in recent years. According the FCC's latest report:

From 2006 to 2010, the number of mobile wireless handset manufacturers that distribute in the U.S. market increased from eight to 21 [see Exhibit 1]. As of June 2010, these 21 handset manufacturers offered a total of 302 handset models to mobile wireless service providers in the United States. Eleven of these

²³ Venture Beat "Interpreting Innovation" online article: <http://venturebeat.com/2009/07/29/att-subsidy-of-375-boosts-apples-iphone-profit-margin-to-60-percent/>

²⁴ The FCC's 15th annual mobile wireless competition report: <http://www.fcc.gov/reports/15th-annual-mobile-wireless-competition-report>



handset manufacturers offered at least ten handset models each.

Exhibit 1 Handset Manufacturers and Handset Models Offered, U.S., 2006-2009

Reporting Handset Manufacturers	2006 (Nov.)	2007 (Nov.)	2008 (Dec.)	2009 (June)	2010 (June)
<i>Total Number</i>	8	12	12	16	21
Total Number Offering Ten or More Handset Models	5	8	8	9	11
Total Number of Handset Models Offered	124	168	346	260	302

Source: FCC, 2011

On the important matter of innovation, the FCC goes on to state:

Over the past three years handset manufacturers have introduced a growing number of smartphones with the following features: an HTML browser that allows easy access to the Internet, an operating system that provides a standardized interface and platform for application developers, and a larger screen size than a traditional handset. In contrast to traditional handsets with applications that include voice and messaging, smartphones have more user-friendly interfaces that facilitate access to the Internet and software applications. Ten handset manufacturers offered a total of 144 smartphones in June 2010, compared to 56 in June 2009. [Exhibit 2] lists the top five smartphone and handset manufacturers, by number of models offered, that distributed in the United States in June 2010.



Exhibit 2: Smartphone Manufacturers Offering Largest Number of Smartphone Models (U.S., June 2010)

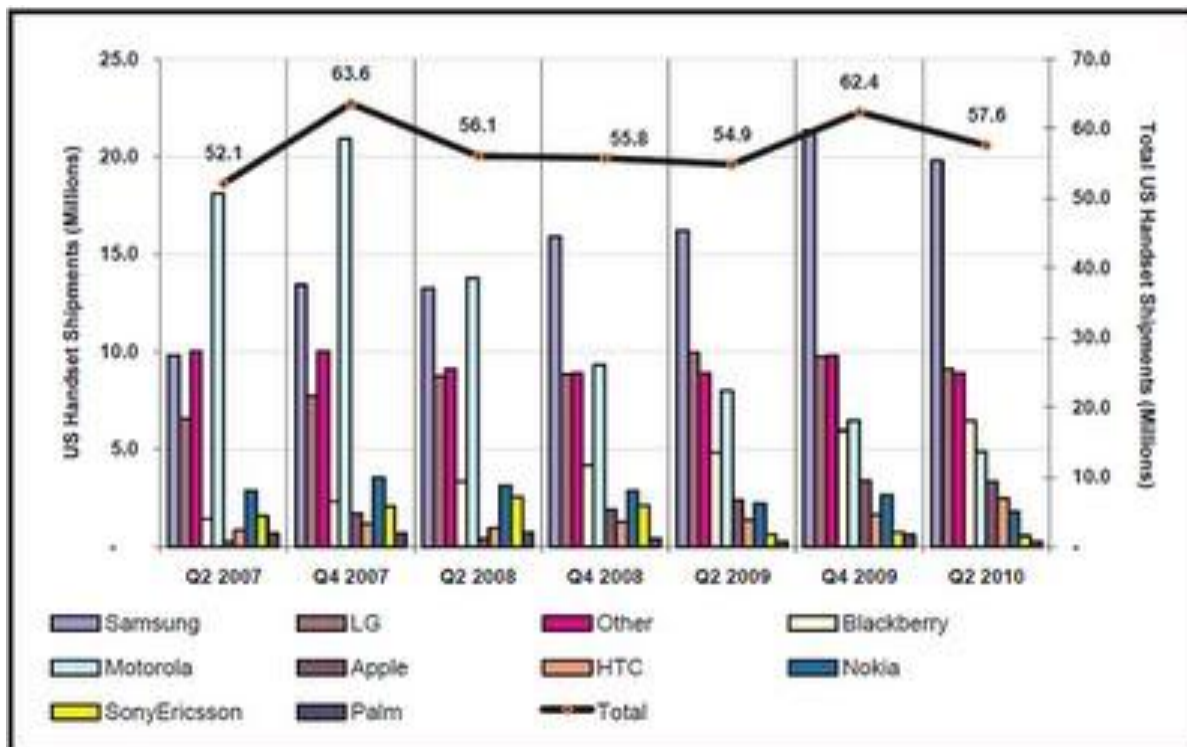
Top Five Smartphone Manufacturers	Number of Smartphone Models
Samsung	38
LG	18
Motorola	15
Research In Motion	13
HTC	12
Total	96

Source: FCC, 2011

The total number of 230.7 million handsets sold in the year to Q2 2010 is quite remarkable, given a US population of 309 million. Exhibit 3 shows quarterly U.S. handset shipments by manufacturer. With subscriber penetration exceeding 100%, the vast majority of Americans already have a phone. Proven consumer desire to keep trading-up, so frequently and extensively with new and additional devices, flies in the face of arguments that IP prices are causing consumer prices to be excessive and not providing value for money with the costs of technology development.



Exhibit 3 U.S. Handset Shipments, Q2 2009 – Q2 2010



Source: FCC, 2011

What consumers want and how they are able to get it

As indicated in my previous IP Finance postings, essential IP costs are modest in comparison to the total spent by consumers on mobile communications. However, value derived by consumers from these proprietary technologies is enormous. Whereas technology developers only deserve to reap financial rewards on essential IP technologies that are actually selected and used with commercial success downstream, if and when this occurs, it is quite legitimate that financial returns on these alone should be large enough to cover risks and costs of investing in portfolios of developments. Otherwise, such investments will simply dry up because technologists cannot reliably predict the “winners.” Portfolios will include both technologies that succeed and those that fail technically, are not selected for standardization, or fall short commercially in the marketplace with poor overall demand or in face of competition from alternatives. Competitors with a variety of business models including upstream licensors and vertically-integrated manufacturers generate these returns in different ways, including licensing fees and through profits on product sales.



Consumers want improving capabilities, quality and value for money in the devices they buy, and they are willing to pay a fair premium for such value".



4 About the Author

Keith Mallinson is founder of [WiseHarbor](#)²⁵, providing expert commercial advisory to technology and services businesses in wired and wireless telecommunications, media and entertainment serving consumer and professional markets. He is a regular columnist with [Wireless Week](#)²⁶, [FierceWireless Europe](#)²⁷ and [IP Finance -- "where money issues meet intellectual property rights"](#)²⁸.

Mallinson's recent clients at WiseHarbor include several mobile phone technology IP owners. His work includes various other commercial issues as well as IP. He provides advisory services including market analysis and forecasts for operator services, network equipment and devices. He also has significant testifying expert witness experience in the cellular sector.

Mallinson led Yankee Group's global Wireless/Mobile research and consulting team as Executive Vice President, based in Boston, from 2000 to 2006. His responsibilities also included consumer media and enterprise communications. Until then, he had overall responsibility for the firm's European division, based in London, as Managing Director from 1995 until 2000. He was the European Research Director prior to 1995.

Mallinson has 25 years experience in the telecommunications industry, as research analyst, commercial consultant and as a testifying expert witness. Complementing his industry focus, he has a broad skill set including technologies, market analysis, regulation, economics and finance. He has published numerous reports and speaks publicly at industry events such as the leading Mobile World Congress and CTIA trade shows on a wide variety of topics including next generation broadband network technology adoption, fixed mobile convergence, semiconductor technologies, intellectual property patents and licensing, emerging markets in developing nations, mobile operating systems, search and advertising.

Mallinson started his career in military communications design and project management with the UK Ministry of Defence. Prior to studying for his MBA

²⁵ Company web site: www.wiseharbor.com

²⁶ Publication web site: www.wirelessweek.com

²⁷ Publication web site: www.fiercewireless.com

²⁸ Publication web site: <http://ipfinance.blogspot.com>



he worked as a minicomputer systems engineer for electronic security company Cardkey Systems. For several years he served as a Director at a seed capital investment firm specializing in information and communications technologies as well as biotechnology.

Mallinson has an undergraduate electronic engineering degree from London University's Imperial College and an MBA from the London Business School, including an academic exchange with Northwestern University's Kellogg Graduate School of Management in Illinois.

