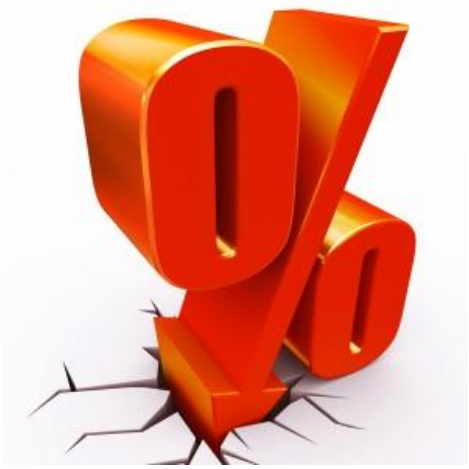
Absurd (F)RAND licensing-rate determinations for SEPs

Judge James L. Robart's findings in the case between Microsoft and Motorola, which issued in April 2013, represent the first U.S. judicial attempt to determine reasonable and non-discriminatory licensing fees. Most recently, Judge James F. Holderman has also had a go in his royalty rate opinion in the Innovatio case. The judges' rate setting applies only to standard-essential patent technologies in H.264 video and 802.11 WiFi. In my opinion, the rates set in both cases are defectively based and unreasonably low.

Rate-setting in SEP licensing



The judges' decisions are both based on the faulty dictum that patentees are entitled only to a small proportion of standard-essential patent value. Valuation methods selected unsurprisingly reflect that predisposition. The judgements significantly rely on the defective notion that SEP-owners' rewards should only reflect "intrinsic value" of technologies, and that they should be deprived a share of the value that comes through standardisation including "network effects."

The judges' decisions employ defective methods in determining "reasonable royalties". Parties in litigation proposed few reasonable royalty valuation options that were acceptable to the judges, so the latter worked with what was left after they had rejected everything else. The judges rightly reject various theories that are nonsensical or unsupported by fact, which are promoted by various firms implementing standards-based technologies and their cheerleaders. The judges identify some major limitations in using patent pools as royalty rate benchmarks while seeming oblivious to other pitfalls. Nevertheless, Judge Robart ill-advisedly uses pools as benchmarks. Judge Holderman, however, latches onto an alternative approach, based on component manufacturer profits, that is also deeply flawed.

Unfortunately, the judicial systems tends to oblige, or at least strongly encourages, the judges to go along with the best (or least unacceptable) royalty rate assessment methods presented by the opposing parties in litigation, even if none of them are very good.

While picking out some points with which I agree, I'll leave it to readers to plough through the bulk of the judges' own analysis explaining how they rejected and selected from among various methodologies presented by the testifying experts. This includes economic and legal principles and precedents in reasonable-royalty determination for patents in general and SEPs in particular.

In this article, I first consider some fundamentals including dubious concepts and assertions around intrinsic value, "hold-up" and "royalty stacking". I then focus critically on the basis – and deficiencies therein – upon which (fair) "reasonable and non-discriminatory" royalty rates were determined in each judge's decision. I have without prejudice adopted the assumptions and conclusions on validity, infringement, essentiality and relative patent strength in the above judgements. I have not evaluated the patents in suit with respect to these issues and I have not had access to various confidential patent licensing agreements in evidence in these cases. Instead, I have focused my analysis on the ways and means reasonable royalties and damages can and cannot be, accurately and reliably, derived upon the basis of the above.

My assessments are as a business analyst with 25 years experience in the ICT sector. I have written numerous industry research publications on technical and commercial developments throughout this period. My work includes many engagements as a testifying expert witness in patent licensing agreement disputes, asset valuations, damages assessments and antitrust cases in the mobile communications industry.

Unreasonable definitions and pie-sharing

There is little or no contention that developing core technologies involves costs and risks for which SEP owners are entitled to recompense under (F)RAND licensing agreements. The risks of developing SEPs include not only the usual R&D risks but also the risk of not obtaining adoption of a successful R&D technology into the standard. Some, however, including these two judges, believe SEP owners do not deserve and should not receive any additional financial reward for technologies being incorporated in standards including enhanced demand resulting from network effects for these.

Total value exceeds even golden inherent value

"With the doubloon, you've got the intrinsic value of the metal plus the numismatic considerations."

These and other recent judgments are awash with dicta on types of SEP value and who is not entitled to benefit from some of them. The notion that the "intrinsic value" should be the maximum reward for SEP technology developers is central to the judgements of Robart and Holderman, and yet there is inadequate basis for such a limitation. Instead, sharing proceeds from the value of standardisation is equated with "hold-up" – a term with intrinsically negative connotations. According to Judge Robart "[t]he ability of a holder of an SEP to demand more than the value of its patented technology and to attempt to capture the value of the standard itself is referred to as patent "hold-up." According to Judge Holderman, standards-setting allows a company "to charge inflated prices that reflect not only the intrinsic value of its technology, but also the inflated value attributable to its technology's designation as the industry standard." Citing Judge Robart, he asserts that "a RAND rate [should] reflect only the value of the underlying technology and not the hold-up value of standardization." These comments echo those of Judge Posner in his 2012 Apple versus Motorola ruling who also conflates sharing value with patent hold-up: "[t]he purpose of the FRAND requirements … is to confine the patentee's royalty demand to the value conferred by the patent itself as distinct from the additional value—the hold-up value—conferred by the patent's being designated as standard-essential." The judges also cite back to various academic papers with theories going back many years. But this is all a whim: there is nothing in patent law, antitrust law or any law other than the dodgy case precedents being set here, or in the voluntary intellectual property policy agreements made by consensus or majority voting among the members of standard setting organisations including ETSI, IEEE and ITU that requires such a restriction.

Judge Holderman recognises that value in standardization cannot easily be separated, but this held little sway, given the unreasonably low rate he selected. He cited one expert by stating that "the court finds Dr. Teece's testimony regarding the difficulty of distinguishing between the intrinsic value of the technology and the value of standardization to be persuasive." It makes no economic or commercial sense to truncate financial incentives and rewards for core technology developers. On the contrary, there is extensive evidence that the IP compensation system with (Fair)RAND licensing works well with SEP technology implementers negotiating market-based rates that share rewards with patentees for the success of standards-based products and services, including network effects.

What Judges Robart, Holderman and Posner and their academic precursors seem to be concerned about is the theoretical possibility that SEP owners will abuse their position once standards are adopted to extract more than their appropriate share of rents from the implementers. But this is only theory and conjecture. In pursuing this they go well beyond reasonableness and deny the technology developers any royalty benefit due to standardisation. This is plainly goes against common sense, industry practice and appropriate returns, and incentives, for development.

Is this really hold-up?

There is an implied but highly questionable assumption; which is rarely stated and never in conjunction with any supporting empirical evidence, that economic benefits from patented technologies in standards, including product improvements and cost savings, will be passed through to end users in lower quality-adjusted prices – not hoarded by implementers and distributors in fatter profits. End-users are worthy of some such gains, and they probably receive some eventually; but there is no good reason that all the standardization value which

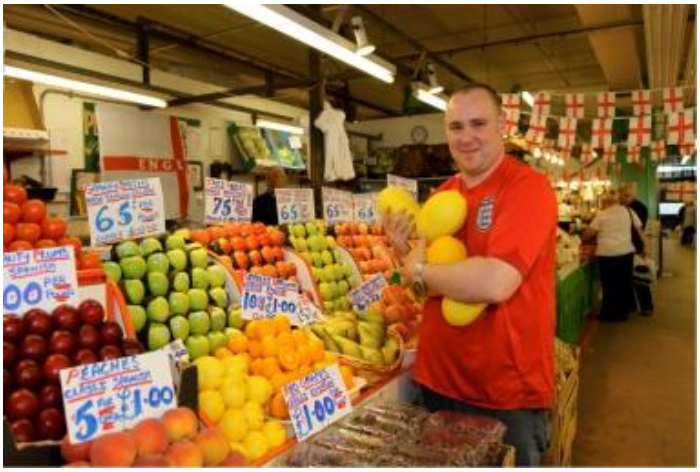
has not passed through should only be accrued by implementers and distributors, including service providers such as mobile operators. For example, market-leading OEMs including Nokia until around 2008 and Apple ever since have retained stellar smartphone profit margins by selling at premium-prices. Elsewhere in price-fixing damages litigation, for example, empirically-based "pass-through" analysis measures how changes in costs are borne or passed on at the various steps in the value chain. This analysis is the norm and is typically required in evidence in those cases; but this kind of assessment is totally absent in these SEP reasonable royalty determinations. There is no proof or even supporting evidence presented that reasonable royalty determinations bifurcate pie shares more widely than among those who develop the standard-essential technologies and those who make beneficial use of them in the design, manufacture and distribution of finished goods and services.

Technologies do not sell themselves to SSOs

Core technology developers do deserve to share in the economic benefits of standardisation and network effects because of the significant costs and risks in developing, proposing and integrating their technologies. That has been the basis for investment and market success so far. Technologies that might find little or no market demand, unless included in standards, are developed at great expense with significant risks in anticipation of adequate rewards if developments yield good technical results, quickly enough, **and,** most significantly, if their sponsors can persuade SSOs to adopt them. Overall, rewards for successes must cover the costs of failures for investments to be sustained. There is no suggestion failure should be directly rewarded; but this is a common misrepresentation by detractors.

Technology does not automatically find itself adopted by SSOs. It takes a lot of time, money and effort even to get a very good core technology into a standard. This is a highly competitive environment with alternative technologies and rival companies often furthering their own interests primarily. Standardization of UMTS and LTE provide enlightening examples.

Even great produce needs sales and marketing or it will go to costly waste



Financial returns for core technology developers must cover the possibility that the entire standard might fail in the market. This can be illustrated with the intense competition that was evident among wireless technologies for inclusion in 3G and 4G mobile standards. There were four air-interface technologies proposed for 3GPP's UMTS standard including WCDMA, OFDMA, WTDMA and TD-CDMA, with member voting penultimately split right down the middle between WCDMA and TD-CDMA in 1997. WCDMA ultimately prevailed, depriving all the other technologies an adequate commercial return from the standard. Several years later, OFDM/OFDMA technologies were made fundamental to several new and competing standards including IEEE's 802.20 (based on Flarion's proprietary Flash-OFDM), IEEE's 802.16 WiMAX, 3GPP's LTE and 3GPP2's UMB. Only LTE and WiMAX have gained sufficient commercial traction for long enough to generate significant revenues for anybody. WiMAX foundered, has failed commercially and is dying young. The other standards were aborted in infancy. Nevertheless, significant R&D expenditures were incurred and work was required and expended in workgroups by a wide variety of would-be and actual contributors to each and every one of these standards.

There is also a lot of attrition at the more granular level of individual and incremental contributions to specific standards and parts thereof. According to Signals Research, in a consulting study for Ericsson, ETSI data reveals 42,318 submissions to 3GPP standards working groups, including 55% of them for LTE, between 2007 and 2008. Most technological suggestions, including those subject to SEPs did not make it into the standards. According to Signals Research's interpretation of the data, "[o]f the LTE-specific submissions, only 3,683 documents, or 15.9% of all LTE submissions, were approved by the pertinent 3GPP working group, meaning that the contents or suggestions contained in the document were incorporated into the LTE standard. The remaining LTE submissions were

withdrawn, noted (but not approved), revised, or not acted upon by the working group. Most of the unapproved submissions fell into the latter classification." That is equivalent to fewer than one in six submissions being successfully approved. Therefore, return on investment for adopted submissions in successful standards must also cover costs for all the core technology development and standards-setting work for the other five. Obtaining approvals for submissions is much more than simply a paperwork exercise. For example, there is also the need for significant backup with simulation, lab and field testing results. Obtaining SSO approvals also requires something akin to sales and marketing activities in the quest to educate and persuade peers in the relevant working groups.

It is economically efficient and necessary that core technology developers should and do invest most significantly in promoting and integrating their technologies in standards, as indicated above. They also require and deserve adequate returns on these costs for technologies that are adopted with commercial success in downstream markets. Simple economic theory shows it is worthwhile incurring significant additional indirect costs, for example, in sales and marketing when the costs of producing are mostly fixed, sunk and with low marginal costs, as is the case with licensing-out SEP technologies. The aim is to offset one's additional fixed costs with additional demand volume at high gross margins through growing the market, competing for share or reducing costs for downstream customers. For example, elsewhere, in pharmaceuticals where patented drugs tend to have very high sunk costs in R&D and low marginal costs in production, it is economically most efficient to spend nearly twice as much on sales and marketing versus R&D to maximise volume demand for products. The U.S. pharmaceutical industry spent 24.4% of sales on promotion, versus 13.4% for research and development, as a percentage of US domestic sales of US$235.4 billion in 2004. The S&M expenditure is to inform, educate and promote in a highly-competitive marketplace to maximise these high gross profit margin sales. This system and the profits it generates also spurs ongoing drug R&D. Similarly, where core ICT technologies are developed, R&D costs are sunk and can be substantial; but marginal costs in licensing them by SEP owners are low. It is therefore worthwhile for technology developers to invest significantly in a wide range of SSO activities, as they do, in pursuit of getting their technologies adopted. This can only be justified if SEP owners get to share in the rewards from the increased utility, lower costs or increasing demand that may ensue. When they do, they are incentivised to continue investing in innovation as they clearly have in SEP-based standards in recent years.

SEPs are neither equal in value nor worthless

The value of individual SEPs reading on a standard can vary significantly; but standard-essential patent pool administrators for H.264 video coding/decoding and 802.11 WiFi technologies generally deem total value proportional to the number of patents owned among SEP owners. Judge Holderman rightly rejected bogus expert witness testimony explaining that low participation in VIA Licensing's 802.11 patent pool was due to licensing charges being too high. He also applies real-world common sense in his reasoning that "it is unlikely that the market would drive the price of all patented technology to zero" by rejecting an expert's notion that "economic models suggest that if two patented and equally effective alternatives both cost the same amount (i.e., charge the same royalty), the two patent holders would negotiate the price down to effectively zero (ignoring the cost of implementing the alternatives), because both desire to have their technology incorporated into the standard, and both know that their technology will be worth practically nothing if it is not adopted into the standard." This ill-conceived theory ignores the obvious conclusion that at zero price the patent holder would have no remaining incentive to have its technology incorporated into the standard. It would, instead, seek other avenues for implementation of its patented technology.

Nevertheless, rate determinations are unsoundly based and derisory for patentees. As Judge Holderman rightly states, "calculating a reasonable royalty 'necessarily involves an element of approximation and uncertainty.'" But bias is neither fair nor just. Their determinations include significant biases that are either unidentified or subject to adjustments lacking adequate and reliable basis, in a similar manner and extent to those of some expert witness estimations the judges rejected under the very same reasoning. For example, Judge Robart multiplies patent pool rates by a factor of three: "the only relevant evidence before the court is that Microsoft pays into the MPEG LA H.264 patent pool about twice as much as it receives back for rights to its H.264 SEPs." As analysed in greater depth below, patent pools have predominantly downstream interests and participation: disaggregating net payments in this way does not accurately reflect reasonable royalties between downstream and upstream interests. There is also scant justification that the figure would likewise also be applicable to Motorola. Instead, he dubiously states that "[t]his conclusion follows logically from the simple fact that Motorola and Google are similarly situated, substantial technology firms with vast arrays of technologically complex products."

By contrast Judge Holderman rejected, for good reason, the explicit use of a pool benchmark in the Innovatio case. Pools tend to skew towards lesser patents and are not

representative of rates for moderate to high value patents, such as Innovatio's, whose owners are relatively more inclined to self select out of pools.

Squashing the stack

Analysis is also based on strongly contested theories of problems and associated harm with respect to what Judge Holderman calls "stacking concerns." The supposition is that unless individual royalties are moderated, aggregate rates will be excessive. There is no empirical evidence that the alleged stacking problem actually has occurred.

It never really piles so high

The debate about what constitutes reasonable royalties is usually framed rather simplistically—in particular by those who assert that royalties are too high. Patent fees are usually referred to as running royalty percentage rates or monetary amounts (e.g., in dollars or Euros) demanded per unit sold. However, these metrics are probably not the most prevalent, let alone universal, determinants of actual payments made on a trade-weighted basis. Instead, standard-essential patent licensing agreements commonly include royalty caps and cross-licensing. Under these circumstances, the effective royalty rate or royalty payment per unit may be reduced substantially or eliminated entirely for incremental sales on relatively large total sales volumes –particularly for the most commercially successful licensees who command largest market shares. With cross-licensing, net charges can be as low as zero or even negative in many cases. In other words, the headline maximum royalty rates, in many or most cases, shrink substantially in the effective rates and per-unit fees that are actually paid, if any at all. Net royalty charges, therefore, can vary enormously from licensee to licensee. They depend crucially on the specific circumstances in licensing,

parties' business profiles with respect to technology development and manufacturing, business models, license-negotiating acumen and commercial performance in their relevant markets. Multiple bilateral cross-licenses can net-off incoming and outgoing royalty claims and payments to relatively low figures, with somewhat similar overall results to patent pooling in some, but by no means all cases.

Spurious precision where demands exceed awards 100-1,000-fold

Judge Robart agreed with Microsoft that Motorola's SEP royalty demands were unreasonable. Microsoft claims that Motorola breached its RAND obligations by making an unreasonable offer in a negotiation to license Motorola's H.264 and 802.11 SEPs. Motorola sought a "reasonable royalty" of "2.25% per unit for each H.264 compliant product, subject to a grant back license under the H.264 patents of Microsoft" and "2.25% per unit for each 802.11 compliant product, subject to a grant back license under the 802.11 essential patents of Microsoft". The royalties are "calculated based on the price of the end product (e.g., each Xbox 360 product) and not on component software (e.g., Windows Mobile Software)". These figures correspond to single or double-digit dollars-per-unit in royalties, with end-product prices varying considerably with specifications. Judge Robart's decision sets the royalty rate and range around two or three orders of magnitude lower, and as a monetary amount per unit rather than as a percentage of end-product prices, as follows:

- H.264 SEPs: "The RAND royalty rate for Motorola's H.264 SEP portfolio is 0.555 cents per unit; the upper bound of a RAND royalty range for Motorola's H.264 SEP portfolio is 16.389 cents per unit; and the lower bound is 0.555 cents per unit. This rate and this range are applicable to both Microsoft Windows and Xbox products. For all other Microsoft products using the H.264 Standard, the royalty rate will be the lower bound of 0.555 cents".

- 802.11 SEPs: "The RAND royalty rate for Motorola's 802.11 SEP portfolio is 3.471 cents per unit; the upper bound of a RAND royalty range for Motorola's 802.11 SEP portfolio is 19.5 cents per unit; and the lower bound is 0.8 cents per unit. This rate and this range is applicable to Microsoft Xbox products. For all other Microsoft products using the 802.11 Standard, the royalty rate will be the lower bound of 0.8 cents per unit".

Judge Holderman only needed to consider 802.11 SEPs in the Innovatio case: in this he nominally settled on a rather different rate-setting methodology to Judge Robart; but cross-checked with his findings. It seems Judge Holderman was mostly likely significantly swayed by these in setting his own rate. His satisfaction with the closeness of the rates is very clear: "the court's RAND rate of 9.56 cents per Wi-Fi chip is comfortably within Judge Robart's reasonable range for a RAND rate for Motorola's eleven standard-essential patents."

In the context of the parties' claims and counterclaims for reasonable royalty rates in these cases differing by several orders of magnitude, it is quite remarkable and extremely pertinent that Judge Holderman has selected a rate that is within Judge Robart's relatively narrow range. There is no reason why one should assume, without adequate justification that the relative values of Motorola's 802.11 SEPs, which are deemed to be "only of minimal value to the standard", versus those for Innovatio, which are deemed to be of "moderate to moderate-high importance to the standard," should necessarily be within only around one order of magnitude. Even that range might seem quite wide in comparison to other estimates one can readily make with far greater precision – such as the cost of ingredients to make a standard-sized plain white loaf of bread, the volume of water in a reservoir, or the temperature on the surface of the sun. However, there was no judicially endorsed RAND benchmark for these kinds of SEPs before Judge Robart's ruling, so there is no ex-ante reason to assume anything about ranges and relative valuations.

Consequently, it is most significant that Judge Robart has anchored his rate assessments on the plentiful and seemingly precise facts and figures about patent pools. However such precision is only legitimate if the patent pools themselves; including adjustments applied to their rates by the courts, are quantitatively representative of licensing outside the pools. I will show in the following sections that there are major biases that make even adjusted patent pool rates inaccurate and unreliable.

Inapplicable benchmarks

Judge Robart finds all kinds of reasons why settlement agreements and licenses executed in the normal course of business are not indicative of reasonable royalties for SEPs relating to these standards including: duress of litigation, inclusion of patents that are not RAND encumbered, expired patents, and cross-licensing. Having exhausted these possibilities, he strays into making unreliable comparisons himself by basing his determinations on patent pools. These are multi-lateral voluntary arrangements which Motorola considered and then

chose not to join late in the game. I have also heard stories of other companies who ever-so-nearly joined the 3G WCDMA patent pool. Similarly, hours before the establishment of the MPEG-2 pool, Lucent elected not to participate, having concluded it would do better licensing its patents individually. There are various reasons why supposedly "interested parties" might not eventually join patent pools including intelligence gathering, tactical bluffing, hedging bets, favourable progress with bilateral negotiations outside the pool and changes in circumstances. But that is their prerogative. No deal is done until it is done. If the understanding is that parties are not bound by patent pool terms and conditions until they sign on the dotted line, then that means they are not at all bound until they do, if ever. Basing rate determinations on pools are a significant distortion from what arms-length negotiations would yield in bilateral negotiations between willing parties, even if a party expressed interest in joining the applicable pool and then changed its mind.

Judge Robart defectively uses patent pool licensing rates as a basis, albeit with some adjustments, for his reasonable royalty rate determinations. The following sections analyse patent pools and explain why they are biased and inapplicable in determining (F)RAND royalties for those outside the pooling agreements.

Raison d'être for patent pools and those who promote them

The primary business objective for most patent pools and industry organisations that promote them is to eliminate, minimise or significantly limit royalty payments inside and outside patent pools. They seek to establish themselves as general benchmarks for SEP value in relevant standards so as to forge and maintain their apparent share of the total patent value created by the standardised technology. For example, patent pooling is promoted for 3G WCDMA mobile technologies, by patent pool member NTT DoCoMo, on the self-serving basis as a major purchaser of mobile phones, in its technical journal:

> *"Because standardized technologies incorporate many patents, high cumulative patent royalties are a major concern. To address this concern for the W-CDMA technology, Platform W-CDMA, an organization that enables patent holders to jointly license their essential patents, has been established and has conducted its licensing business since 2004."*

Similarly, a primary mission for setting up the NGMN Alliance (a creation of the major wireless operators) was to minimise royalty rates, even though this is not stated explicitly. It

issued a Request for Information and conducted a beauty parade among patent pool administrators to spur interest in the formulation of patent pools for LTE SEPs.

Constituency-effect biases in patent pools

Patent pools have become popular in certain technology fields; but there are several reasons why they are inapplicable benchmarks, with inaccuracies and severe biases arising from strong constituency effects and other shortcomings:

a. Patent pools are downstream-oriented despite including large proportions of vertically-integrated members. According to Judge Robart, "[t]he uncontroverted evidence before the court demonstrates that an SEP licensor in a patent pool receives both royalty rates from the pool and value to the SEP holder in terms of unfettered access to the intellectual property of the pool". This neglects the fact that some licensors, such as upstream core technology developers including universities who do not manufacture, might not need access to access to others' IP for that purpose. This is a major reason why such companies are disinclined to join. In contrast, minimising royalty out-payments is more important than generating cash royalties for most implementers, including those with upstream core-technology development activities. Where these kinds of vertically-integrated companies predominate in the formation and ongoing control of patent pools, as they invariably do, they conspire to keep rates relatively low. Judge Holderman concludes, in the case of the Via Licensing patent pool for 802.11, that it was not that licensing prices were set too high, as suggested by one testifying expert: on the contrary; "[t]he court finds it more plausible, however, that the prices are too low to give patent holders a reasonable return on their technology."

b. Patent pools have only succeeded or significantly exist for a relatively small number of particular technologies and standards. Some patent pools for audio and video streaming technologies have been successful in pooling most of the SEP technologies for the relevant standards; but pools have generally fared poorly elsewhere. Various attempts in 3GPP cellular and IEEE wireless technologies over many years have drawn at best pitifully low and unrepresentative contributions to prospective pools. The 3G WCDMA patent pool was generally rejected by significant patent owners. Only mobile

operators including NTT DoCoMo along with its highly-dependent, obedient and isolated Japanese equipment vendors and Siemens joined. While Siemens' position in 3G IP assets was marginalized with adoption of WCDMA, as opposed to its preferred TD-CDMA technology, in the initial standardization of UMTS in Release 99, it retained a significant market position in handsets and infrastructure manufacture. According to Judges Robart and Holderman, "the Via Licensing 802.11 patent pool has not been successful in encouraging widespread adoption of the 802.11 Standard through buy-in to the pool of licensors and licensees. As stated, the purpose of the RAND commitment is to achieve widespread adoption of the standard. It stands to reason then that the less a patent pool achieves widespread adoption of the standard, the less relevant the pool becomes as an indicator of a RAND royalty rate." Also according to Judge Holderman "[t]here are several problems with the use of the Via Licensing pool as an indicator of a RAND rate in this case. The first is that the pool has attracted only five licensors, thirty-five patents, and eleven licensees. The Via Licensing pool has therefore been relatively unsuccessful in attracting licensors." Over 1,000 companies have participated in 802.11 standard-setting. VIA Licensing's coverage is therefore very low. Given all the biases, as described above and below, it seems most likely to be woefully unrepresentative of WiFi patents in general. There appears to be no evidence to the contrary.

Pool flop sets poor example

c. Most significantly, in the context of reasonable royalty assessments in these cases, patent pool representation is also significantly skewed towards

companies holding relatively weak patent portfolios. Judge Robart recognises that "[t]he trial record supporting the court's policy concern is clear: Other things remaining the same, the higher the value of an owner's SEPs and the stronger its licensing program, the lower is its incentive to join a patent pool and the less likely it is to join a pool." For example, none of the clear leaders in 3G WCDMA technology—neither Ericsson, nor Nokia nor Qualcomm—joined the 3G WCDMA patent pool. Owners of strong, valuable patent portfolios are put off joining because patent pools tend to under-value such patents, with most pools assigning value on the quantity of essential patents while making no allowances for differences in patent quality or value. Judge Holderman nominally rejects the use of pool rates in the Innovatio case specifically for the reason that rates may be biased towards lower value patents and cannot be seen as benchmarks for moderate to high value patents. However; he is clearly comforted by the fact that the rate he sets falls within Robart's pool-based rate range.

d. Patent pools, therefore, tend to significantly encourage and reward quantity over quality or value by applying uniform rates to all included SEPs in most cases. Patent pool administration tends to favour assessing patent essentiality and then allocating royalty revenues and costs with simple mechanisms such as proportionally on the basis of total patents owned and number of units manufactured or sold. This clearly short-changes those with strong or valuable patents. It also creates the detrimental incentive for members to make as many new filings as possible for prospective SEPs, rather than to focus on a smaller number of stronger and more valuable patents. Consequently, over the years, average patent quality will fall as the total number of patents in the pool increases. Relatively low rates per patent will also result.

e. A further fundamental problem with most patent pools and other shared licensing methods is in simplistically allocating royalties to individual patents or patent portfolios. For administrative ease, patent pools tend to allocate value in proportion to the count of SEPs. This proportionality, as employed by MPEG LA's H.264 pool and Via Licensing's 802.11 pools, does not and cannot reflect that individual SEPs differ in value. Some SEPs can be worth up to several orders of magnitude more than others. For example, seminal

patents with many forward citations, court-proven validity, widespread licensing or successful patent infringement history might be worth thousands of times more than those of dubious validity or usefulness. Patent pool participant licensors and licensees also voluntarily agree to, simple, sum-of-the parts portfolio valuations, with addition and subtraction of incoming and outgoing royalties, in determining net royalty charges.

f. Most pools arbitrarily decide on some aggregate maximum royalty to be charged by the pool. There is no reason why this calculus should be imposed on others outside the strictures of patent pool membership and administration. Valuations in bilateral licensing agreements do not have the simplistic caps and linearity employed by patent pool administrators. There is no justification to subjugate a company with a superior patent portfolio to the arbitrary aggregate royalty and allocation methodology adopted by pool members with inferior (e.g., weaker, less valuable) patent portfolios.

g. In contrast to fairly simple pricing metrics for patent pools—predominantly with running royalty rates or per-unit fees—while also including some per unit caps, bilateral licenses may have broader scope and a much wider range of terms and conditions. Licences typically include portfolios that might include multiple standards and non-SEPs. Payments can be percentage-based or per unit, they might include running royalties or up-front lump sum payments, could be fully paid-up, or include annual or lifetime caps, for example. Public discussion of royalties including academic literature and reasonable royalty rate judgements such as these tend mostly to be described in terms of running royalties in money payments (e.g., a dollars or cents figure) or royalty rates as a percentage of the price of a component or finished product. This view of the world is somewhat consistent with the way patent pools work, but there are many and major examples of licensing that bear little resemblance to this. For example, with royalty caps on individual products or on high total sales volumes, effective royalty rates frequently shrink to small proportions of headline royalty rate percentages or per unit fees. Similarly, with lump sum paid-up licences, licensees also have the opportunity and incentive to effectively diminish their royalty rate percentages by successfully selling higher volumes than parties expected.

h. Non-monetary terms and other factors can also be very significant. For example, grant-backs, non-assertion and defensive suspension provisions make patent pools more attractive to downstream players including vertically-integrated players. These provisions provide little incentive to disinterested upstream technology developers. Inclusion of non-SEPs and the bundling of SEP licensing across standards, which are forbidden with patent pooling, and time left until patents expire may also be very important factors in choosing whether or not to join a pool versus seeking to complete multiple bilateral negotiations outside of it.

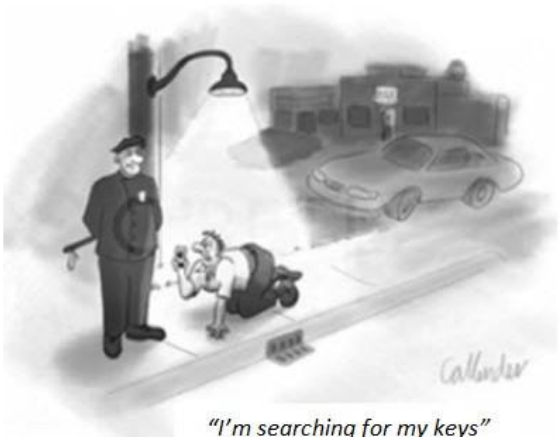
Extrapolations and analogies

The only attempt to quantify the disparity in SEP values in these two cases accepted was with the testimony of one expert who came up with a rule of thumb akin to Pareto's 80:20 rule. This was applied not to a pool rate; but to apportioning "the 12.1% profit margin on a WiFi chip" defectively considered to be the applicable amount available for payment of royalties. Judge Holderman latched onto this expert witness testimony "relying on a 1998 article finding that the top 10% of all electronics patents account for 84% of the value in all electronics patents."

The boom in SEPs and patent pooling in ICT are predominantly post-1998 phenomena. Empirically-based recalibration with something more up-to-date valuing SEPs, in particular, is required, given prolific tactical patenting to increase patent count under proportionality rules, for example. Furthermore, how one could, for example, reliably extrapolate upon a finding, such as that above, to value "top 5%" patents is unclear. This should only be attempted with analytical rigour and sufficient empirical support.

Patent pool rates are readily and clearly available publicly, but that does not make them generally representative of bilateral agreements. If you lose your car keys at night you may be inclined to start looking for them under the light of a street lamp. However, the keys are quite likely to be found where visibility is not so good. Taking such analogies further; patent pool rates are used to benchmark reasonable royalties in a similar manner that drunks use street lamps – more for support than illumination.

Street lamp assistance



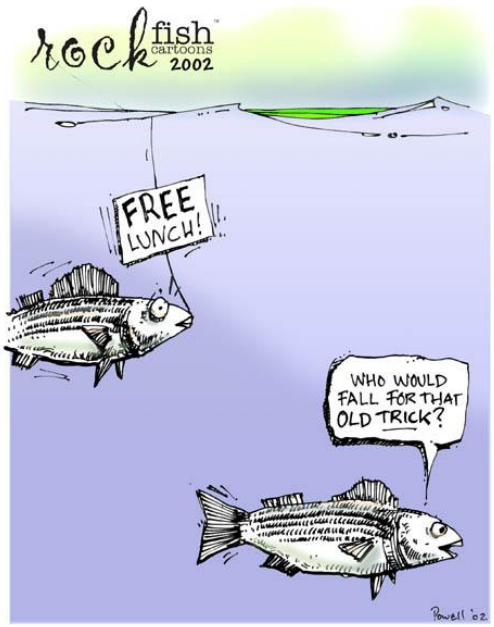
Litigation parties and the courts need to seek out a wider and more representative selection of valuation benchmarks. Companies that have well established licensing programs with broad market acceptance of their SEP portfolios and licensing terms often provide better, more accurate, reliable and generally-applicable benchmarks for royalty rates consistent with (F)RAND undertakings. For example, Ericsson, InterDigital, Nokia and Qualcomm own, in total, the majority of SEPs reading on 3GPP standards. They have well-developed patent licensing programs for these and many other standards, including 802.11, for example.

The absurdity of a free lunch

The notion that patent pool licensing rates are representative of bilateral (F)RAND licensing is shown to be false by the existence of the royalty-free patent pool for the Bluetooth personal area network wireless technology standard. Some claim this is not a true patent pool; but that is because it does not have the usual administrative trappings to exhaustively evaluate essentiality, collect and disburse royalties. Those would be superfluous with royalty-free licensing. Whereas it would be bizarre to assert that zero royalties are *reasonable* compensation for an SEP technology developer with no means to derive income in the downstream market, many an implementer, distributor, service provider or end user would be quite happy with that arrangement. Royalty-free pools sacrifice all potential licensing fees in order to maximise standards' adoption and demand for products in downstream markets including components, finished goods, and services. Vertically-integrated licensors are more concerned to minimise royalty out-payments and stimulate demand for downstream products than maximise their royalty receipts. In this case, patentees' rewards must be entirely through alternative benefits to royalty income. Open source software ecosystems have similar characteristics with OSS software developers voluntarily contributing shared code for free and seeking no royalties while making their

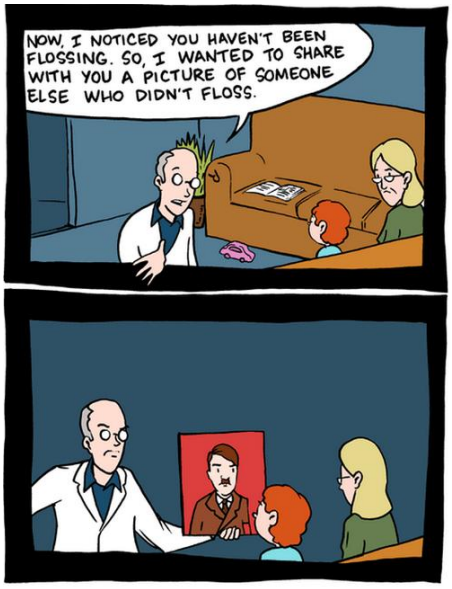
money in downstream markets such as hardware, customization, integration and support (e.g., Redhat –"The World's Open Source Leader").

Beware of getting hooked on costly freebies



Reductio ad absurdum, as argued above, can be applied further to the bogus notion that grossing-up royalty costs plus royalty revenues (as opposed to considering only royalty revenues, or, even worse, net royalty revenues after subtracting royalty costs) captures all value accrued from the pool. As already discussed, Judge Robart multiplies pool rates by a factor of three in his shaky assessments on the basis that "Microsoft pays into the MPEG LA H.264 patent pool about twice as much as it receives back for rights to its H.264 SEPs." If this logic was applied to a royalty-free pool benchmark the adjusted value would be three times nothing, which still equals nothing. Pool rates, therefore, cannot be used as reasonable royalty benchmarks unless the corresponding adjustments can be proven more reliable. For example, multipliers would tend towards infinity with near-royalty-free pool rates. If pool rates are to be used at all, adjustment factors need to be much larger than Judge Robart estimates, and other kinds of adjustment (e.g., additive, rather than multiplicative) are required in at least some cases.

Reductio ad absurdum



Just because a theory is popular or convenient and seems to fit does not make it right. If pooling can skew rates to zero, how high might they reasonably be without pooling? Any accurate and reliable use of pools as benchmarks must have a sound basis for establishing their rates and scaling them versus non-pooled rates in negotiated bilateral agreements. This was absent in Judge Robart's analysis.

He has provided insufficient justification for pool-based rates despite his findings that:

- Motorola's patents were below average quality and utility, based in part on testimony from Motorola's own expert with regard to a patented H.264 feature that was rarely, if ever, used (e.g., not even by Google's YouTube).

- Motorola was close to joining the Via Licensing patent pool, even though it did not ultimately join.

- Motorola's negotiating history and executed licensing agreements with other parties are consistent with his pool-based rate findings.

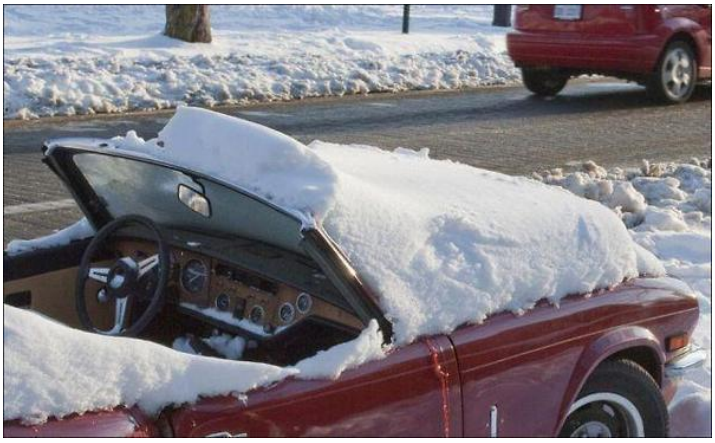
The confidentiality of the latter, in particular, makes it impossible for me to critically assess the conclusion. Nevertheless, this does not make patent pool benchmarking generally applicable, for example, to the Innovatio case, in particular, where the patents were deemed to be above average with respect to quality and utility. Using patent pools as a benchmark for what is generally fair and reasonable to both upstream and downstream interests in

bilateral negotiations outside of pooling is misplaced and will yield unfair, unreliable and in some instances absurd results.

Judge Holderman shuns pools, but limits royalty base

Judge Holderman takes an approach to (F)RAND royalty determination which is substantially based on Robart's ruling but differs on several points. In particular, he ultimately bases reasonable royalties not on pool rates, as Robart did, but on allocation of "the 12.1% profit margin on a WiFi chip" among the total population of relevant SEPs. Judge Holderman believes the "Top Down approach [proposed by an infringers' expert] best approximates the RAND rate that the parties to a hypothetical ex ante negotiation most likely would have agreed upon in 1997, before Innovatio's patents were adopted into the standard."

Shortcomings with top down



Although I agree with some of Judge Holderman's analysis, his damages assessment is deeply flawed. Judge Holderman rightly recognizes patents vary in value and he recognizes that patent owners would have no incentive to invest in new technologies or would leave SSOs if their patents only received incremental value versus closest alternative. However, while rejecting damages assessment methods with patent pool benchmarks, he leaps onto this alternative "top-down" method that is inconsistent with how royalties achieve value and are derived in the real world. He erroneously bases his assessments on the notion that royalty costs must come out of and be a modest proportion of chip component profit margins. This is nonsense.

Royalty base

Royalty costs do not generally come out of contract manufacturer or component manufacturer profit margins. Royalties are in some cases paid at the component or contract

manufacturer level, and in some cases at the product or original OEM level. Implementers treat licensing fees like any other input cost such as labour or materials in manufacturing. In some cases, manufacturers may even mark up royalty charges along with other costs in setting their prices. This can result in additional, not reduced, profits to the implementer (i.e., the licensee).

Royalties are paid for manufacture, sale and use of technologies. There is generally no double-dipping by patentees. Once royalties have been levied and paid for a particular purpose, they are usually not paid again, further along in the value chain. Contract-manufacturer pricing is generally cost-based in ICT nowadays. If a contract manufacturer (e.g., Foxconn) pays royalty fees, they are an allowable "bill of materials" cost upon or before which its profit margin is applied in setting the agreed price with the OEM purchaser. Alternatively, and most commonly in manufacture of leading products such as mobile phones and DVD players, royalties are paid downstream by the OEM on production.

Judge Holderman correctly states it is difficult to estimate share of finished goods value in WiFi functionality: but this does not, however, negate the principle that patent value (as well as legal liability) extends beyond the smallest component incorporating SEP functionality. A WiFi chip in isolation to the end product in which it is incorporated cannot provide the SEP functionality. A WiFi chip will not work at all without other components such as an antenna. The functionality and benefits of wireless connectivity are exploited throughout the device with a variety of applications including email programs, web browsers and video streaming applications. A good example of the value proposition for the addition of 3G and 4G wireless technology to a product is the comparison between Apple's market demand-driven price for iPhone models (from around $450 unsubsidised or without service contract) versus a WiFi-only iPod Touch (from $299). Forcing IP licenses to be paid out of chip-maker profits is like forcing a book author's publishing copyright royalties to be paid out of the profits of the ink or paper suppliers.

In Judge Holderman's defective reasoning, adopted from a misguided expert witness, "the method of basing the total potential royalty for all 802.11 standard-essential patents on the chipmaker's profit insures that the total royalty stack will not exceed an amount that would force chipmakers out of the business." This is a completely artificial and misplaced constraint. It is the finished goods manufacturers who are liable and are being sued here; including Cisco Systems, Inc., Motorola Solutions, Inc., SonicWALL, Inc., Netgear, Inc., and Hewlett-Packard Co. Their profits are entirely different to, and more significant than, those of

their chip suppliers. The hardware footprint and manufacturing costs of wireless chips are shrinking, while development costs and value in firmware and software algorithms increase. Where chips are custom designs, the latter costs are borne by OEM customers, not by chip manufacturers. It should be at the manufacturers own peril if they do not make sufficient cost provisions to include unpaid royalties, if applicable, in their pricing. Competing with pricing as if a technology is royalty free – a popular myth in WiFi that was promulgated by ideologists for many years –is, nevertheless, an error of the infringer. It is neither the duty nor the privilege of the court to protect them from the repercussions of their naivety.

Judge Holderman credits Innovatio for having above-average value 802.11 SEPs, but his proportionality-based assessments do not quantify or adjust for the proportion of the total 3,000 patents that are "claimed" to be essential to the 802.11 standard that are actually essential. He notes that the "number of approximately 3000 is a credible account of the number of potentially-essential patents. Nonetheless, there is no guarantee that all of those approximately 3000 potentially essential patents actually are essential."

However, he instead concludes "that Innovatio's patents are in the top 10% of all 802.11 standard essential Patents" while using 10% x 3,000 = 300 as the denominator in his proportionality-based calculations. This discrepancy could make a significant difference. It is unclear what proportions of declared essential patents are actually essential to various standards. For example, a 2010 report by Fairfield Resources, sponsored by Nokia, assessed that only 50% of patents declared as possibly essential to 3G standards by patentees were actually or probably essential. Whereas the report has been widely criticised for findings such as who owns most of the essential patents, the above conclusion is far less controversial. With tactical patenting to puff-up licensor positions for patent pooling or bilateral negotiations, it is quite possible this "denominator" would be much smaller (e.g., 50% x 300 = 150). Innovatio's value share would consequently double. Judge Holderman made no such adjustment.

Essentiality is not assessed by SSOs and can only be definitively determined by a court. This exclusively occurs only when litigation demands it. Judge Holderman notes that "for purposes of this proceeding all of Innovatio's asserted patent claims are essential to the 802.11 standard." No determination has been made for the 3,000 total patents claimed as essential.

Conclusion and suggestions

Judges Robart and Holderman have highlighted many pertinent issues in establishing (F)RAND rates and limitations with assessment methods and benchmarks, but their decisions are still significantly based on falsehoods. Patent pools and chipset profits provide inadequate and misleading benchmarks. Parties in litigation through their experts need to find more representative benchmarks that are applicable to the realities that bilateral licensing establishes distinctly different rates than patent pools. Companies that have well established licensing programs with broad market acceptance of their SEP portfolios and licensing terms often provide better, more accurate and reliable benchmarks for royalty rates consistent with (F)RAND undertakings. Licensing rates on ICT products commonly apply across the entire product because value is delivered and enjoyed on that basis.

About this article, the author and WiseHarbor

This article was written by Keith Mallinson and initially published by IP Finance on 14th November 2013.

Keith Mallinson is founder of WiseHarbor, providing expert commercial consultancy since 2007 to technology and services businesses in wired and wireless telecommunications, media and entertainment serving consumer and professional markets. He is often engaged as a testifying expert witness in patent licensing agreement disputes and in other litigation including asset valuations, damages assessments and in antitrust cases. He is also a regular columnist with Wireless Week, FierceWireless Europe and IP Finance -- “where money issues meet intellectual property rights.”

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