
FRAND Licensing of IP Rights and Standard Setting

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Jevons Institute 2007 Colloquium on Antitrust and
Regulation, May 10, 2007

I. INTRODUCTION

Concern about patent ambush (hold up)

- lack of disclosure

[Rambus; Dell's patent on VL-bus]

- ex post disagreement about meaning of FRAND

[Qualcomm's cases (Broadcom, Nokia,...) relative to 3G/WCDMA technology]

Which investment?

Two types

- collectively, group of technology users coordinate on standard over alternative standard

[matters if network effects or standard-based governmental norms]

- individually, technology users sink monetary investments.

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- ✓ Patent ambush:
 - hurts technology users,
 - (more interestingly) when anticipated, hurts patent holders as a group
[demand curve more elastic ex ante than ex post \implies would like to commit to lower prices than they will charge ex post].

 - ✓ Investigate alternative (not necessarily exclusive) ways of addressing problem.

II. APPROACH #1: EX POST INTERVENTIONS

(a) SSO invalidates/revisits standard

[Golden Bridge v. Nokia. SSO removed feature from standard. Golden Bridge claimed user conspiracy to avoid paying royalties]

sunk investments?

(b) limit on patent holders' right to seek injunctive relief

[Lemley-Shapiro].

(c) SSO, arbitrator or court sets royalty cap

One approach: proportionality

Essential patent: “One cannot implement the entire standard without infringing on it”.

Many functionalities are essential then.

- ✓ Patent pools experience: essentiality is a complex notion
 - patents rarely perfect complements (i.e., license to $n - 1$ useless). More patents enable more functionalities;
 - complements vs. substitutes depends on price, time;
 - authorities and even parties don't always know what is essential.

- ✓ “Not all patents are born equal”. Incentive to split patent into 2 patents

[Layne-Farrar-Padilla-Schmalensee 06. Layne-Farrar-Lerner 06].

Another approach: case-by-case royalty setting

- ✓ *Difficulty: stronger rules cause members not to join, especially when multiple SSOs*

Price regulation encourages non-participation or else applications to laxist SSOs, and can lower welfare even if regulator benevolent and well informed.

[Lerner-Tirole *AER* 06, Chiao-Lerner-Tirole *RJE* 07, on forum shopping]

- ✓ Hence royalty setting must encompass non-members or members of SSOs that do not require FRAND. Then amounts to compulsory licensing.

The ex ante voluntary negotiation counterfactual

“Royalties that the patent holder could have obtained in open technology competition before commitment to a standard”.

[Farrell-Hayes-Shapiro-Sullivan 2007, Swanson-Baumol *ALJ* 2005, Layne-Farrar-Padilla-Schmalensee 2006]

Remark 1: (correctly) accounts for the two types of investment.

Remark 2: how does one compute ex ante royalty rate?

III. APPROACH # 2: EX ANTE NEGOTIATIONS

- Few SSOs encourage price setting

[exception: VITA (computer systems) requires participants to disclose their patents and the most restrictive license terms they will offer.]

Should antitrust authorities adopt a more lenient stance toward collective negotiations?

- Possible mechanism: set price, SSO decides on whether to adopt specification that reads on the patent

[Swanson-Baumol *ALJ* 05, Lerner-Tirole *AER* 06)]

- How strong is then the buyer-cartel argument, especially if forum shopping feasible?

[does not apply if adoption of codes by government: Allied Tube, or unique certifier].

Multiple patents

- Patent pools proposed as a possible solution to “patent thicket” problem
[Merges, Shapiro *IPE* 2001]
- Not a new concept.

BRIEF HISTORY

1856: Sewing Machine Pool.

1902: **National Harrow**

[Supreme Court. “the general rule is absolute freedom in the use or sale of rights under the patent laws”.]

1912: Standard Sanitary.

1931: Standard Oil (complementary patents defense).

1930s -1940s: Congressional hearings.

1945: **Hartford Empire**

[Justice Black: “the history of this country has perhaps never witnessed a more completely successful economic tyranny”].

1997: **DOJ’s first business review letter.**

[MPEG-2 digital technology standard for video compression.]

BASIC TRADE-OFF BETWEEN ROYALTY STACKING AND SUPPRESSION OF COMPETITION

Technology covered by n patents, owned by n patentholders, say.

- **Perfect complements**

[licence to $n-1$ no better than license to none; each IP owner is gatekeeper over technology.]

- Chain of monopolies/royalty stacking:
raise price of license $i \implies$ demand for technology decreases
 \implies demand for other licenses decreases.

- Patent pool
 - lowers price
 - raises profit and consumer welfare.

- **Perfect substitutes**

Pool: cutthroat competition \longrightarrow cartel.

Reality is in between

✓ Patents rarely perfect complements

- additional licenses enable more functionalities
- design-arounds
- substitute patents.

[Example: Lucent's refusal to include two patents deemed "essential" to MPEG2 standard. Lucent made little profit ex post.]

✓ Authorities often don't know

- Complementarity/substitutability depends on prices
[C at low prices, S at high prices]
- C/S pattern changes over time

[Example: functionality A , demanded today, produced by patents 1 and 2 jointly; functionality B , demanded tomorrow, produced indifferently by either patent.]

INDEPENDENT LICENSING

Owners' ability to license their IP independently of the pool.

Questions:

- **Ex post view** (“merger analysis”)
impact on incentive to form pool and to keep price low?
- **Ex ante view** (Schumpeterian)
impact on incentive to innovate?

Ex post view

Lerner-Tirole *AER* 2004 assumes separable benefit

[$\theta + V(x_1, \dots, x_n)$, where θ user-specific parameter; $x_i = 1$ if license to patent i ,
= 0 otherwise]

IL perfect screen. Pools with IL always raise welfare.

- ✓ If pool lowers price in the absence of IL, IL is irrelevant (does not create competition for the pool),
- ✓ If pool raises price in the absence of IL, IL restores competition and re-establishes no-pool price.

Ex ante view

Pool raises profit, but possibility of “innovation for buyout” (excess/wasteful innovation).

Pool with IL always increases welfare relative to no pool.

Empirical findings

[Lerner-Strojwas-Tirole *RJE* 07]

- Pools involving substitute patents* are unlikely to allow individual licensing.

Other observations:

- Large pools are more likely
 - to allow individual licensing,
 - to centralize control of litigation,
 - to license to third parties.
- Recent era (strong antitrust scrutiny): (a) more important patents selected for pools and (b) selected patents subsequently more intensively referenced by others.

*: [Proxies: litigation, remedies (renegotiation, RAND, RF).]

IV. WHAT ABOUT DISCLOSURE RULES?

Arguments on both sides mildly convincing:

Pro-disclosure side ignores:

- non-participation and forum shopping,
- costs of disclosure
 - [(a) needle-in-a-haystack argument; (b) disclosure of strategy; (c) can jeopardize grant of patent]
- incentive *not* to search.

Anti-disclosure side fails to address:

- patent ambush
- if search for patent that reads on standard very costly at SS stage, isn't it wasteful rent-seeking when owner seeks an injunction?
- is a patent whose content is unknowingly duplicated by a community of technology users, "non-obvious"?

DISCLOSURE IN STANDARD SETTING

- If disclosure is not required, pricing regime (royalty free, FRAND,...) applies to undisclosed patents that are later deemed essential to the technology.
- Evidence: disclosure much more likely to be required by FRAND requiring-SSOs than by RF requiring-SSOs.

Adverse selection effect: FRAND-requiring SSOs more appealing to ambush-seeking technology sponsors.

[Chiao-Lerner-Tirole *RJE* 07].

GRANTBACKS IN PATENT POOLS

Grantbacks: force members to turn to pool future patents that will be deemed “essential”.

- ✓ discouragement of future innovation by members,
- ✓ check on members’ opportunism.

would expect grantbacks to be more common in pools of complements.

This is indeed the case.

[Lerner-Strojwas-Tirole *RJE* 07].