



IEEE Standards Board Forum

Views on challenges involving patents in standards

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Where innovation starts

Outline

1. Introduction
2. The changing context
3. Overview of problems and solutions
4. My pick: what I believe SSOs could do (should do?)

Some notes:

- I try to identify the concerns with patents in standards, and take the interest of the public at large as starting point (several important groups in this public are underrepresented when policies are decided upon)
- You might not agree with me (quite likely some of you will not agree), but I will try to be open, unbiased, sometimes provocative, and in any way tell you what I believe in
- These are personal views, not those of US NAS, EC, or any other organization I have done work for.

Introduction

"That as a general proposition patented design or methods not be incorporated in standards. However, each case should be considered on its own merits and if a patentee be willing to grant such rights as will avoid monopolistic tendencies, favorable consideration to the inclusion of such patented designs or methods in a standard might be given." (*)

(*) see US NAS study for dating and origin of this quote

Inclusion of patented technology in standards may be desirable

- ... and sometimes is inevitable

But also potential negative consequences:

- Ambush (blocking properties)
- Holdup
- Cumulative licensing fees ('royalty stacking')

Most SSO's have F/RAND policies to address these risks.

→ Are these policies fit to serve the next decades?

Trends and observations

General developments on patents: IP strategies have become more important over time, a more patent friendly legal environment (e.g. CAFC in the US), growth of patent applications, increase of litigation, more aggressive IP business models (patent aggregators, patent assertion entities, 'privateering', 'trolls')

Specific developments related to patents in standards :

1. Standards are becoming more relevant and successful
2. Convergence of standardized and non-standardized technology
3. SEPs are extremely valuable business asset
4. Increasing number of SEPs
5. SEPs are more litigated than other patents
6. Market dynamics
7. SEPs often interrelated with non-SEPs
8. Increasing ownership transfer of SEPs

Trends and observations

1. Standards are becoming more relevant

Success story of standards....

Interoperability standards are becoming increasingly prolific, both 'genuine' standards as well as ITC standards as 'enablers':

- *smart grids, e-health, banking, public transport, logistics and intelligent transports systems, biometrics and agricultural systems*

More and more, standards are central to a business model or a company

Trends and observations

2. Convergence of standardized and non-standardized technology

As a result of generic computing power, vertical reliance of technologies and related convergence of applications we see:

- Devices incorporate multiple standards
 - A Blu Ray player will typically incorporate BR, DVD and CD plus its media coding formats (e.g. H.264) in its various formats, but often also DivX, MP3, WiFi, ethernet, an internet browser
 - A smart phone will typically include..... (well, you know)
- But also non-standardized technology
 - A smart phone often has a software platform that is not an open standard developed by an SSO, and often has lots of other not standardized features
- And with the persuasive nature of ICT, we increasingly find standards used in cars (EU: eCall), fridges, and all types of daily apparatus

Different worlds, different cultures, different fields of force, different expectations...
-> **more tension**

Trends and observations

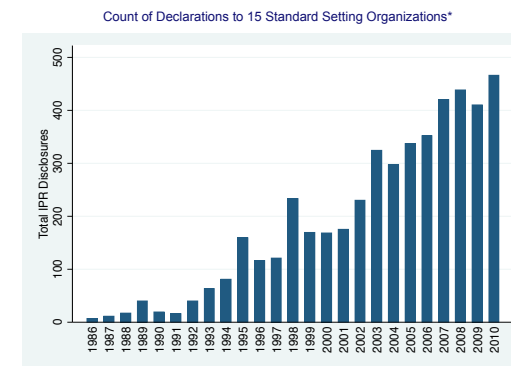
3. SEPs are an extremely valuable business asset

- Significant licensing revenue opportunities
 - 'any implementer is an infringer'
- Provide bargaining power when securing access to the required complementary SEPs and non-SEPs (cross-licensing)
 - for market entry scenarios
 - For sustainable participation
- Can align standard with own R&D investments, technological advantages, strengths, head start etc.
- Opportunities for litigation-based business models
- Keep doors open for move to a licensing-based business model, or (partial) sale of assets

Creates tremendous incentives to obtain or acquire SEPs

Trends and observations

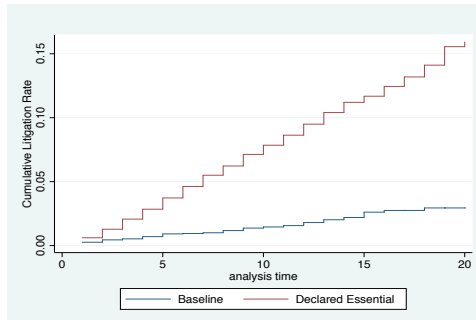
4. Increasing number of SEPs



*Disclosure = (Firm, Date, SSO). Some disclosures list hundred of individual patents
Source: Bekkers, Catalini, Martinelli and Simcoe (2012)

Trends and observations

5. SEPs are more litigated than other patents (over 5 times as often)



Lifetime Litigation Probabilities (20-Year Cumulative Litigation Hazard)

Declared Essential Patent: 15.9%
Vintage / class baseline: 2.9%

Source: Bekkers, Catalini, Martinelli and Simcoe (2012)

"In practice, patents are weapons. Technology companies load up patents like Cold War nations stockpiling nuclear bombs, hoarding them for use when an important market is at stake..." (Wired magazine, 21 Dec. 2012)

Trends and observations

6. Market dynamics

Increasing dynamics in the market

- Entry, exit, bankruptcy, dramatic changes in market share
- Just compare the mobile phone market of today with that of 20 years ago

Changes in value chains:

- Vertical disintegration
- Upstream technology developers,
- Network operators moving out of R&D
- Increase of elaborate business models on the basis of patented knowledge:
 - Non-practicing Entities (NPEs)
 - Patent aggregators –defensive or not
 - Patent Assertion Entities (PAEs)
 - Patent sharks / trolls, etc.

Trends and observations

7. SEPs often interrelated with non-SEPs

In real life... its not easy to see SEPs in a context totally disconnected to non-SEPs.

From the **implementation** perspective

- Some technologies are considered as key or even 'necessary' from a commercial point of view, but strictly speaking not in definition of essential patents
- Interrelated with consumer expectations

Form the **licensing** perspective

- Very often, companies engage in broad (cross) licensing agreements in order to achieve (mutual) freedom to operate

From the **litigation** perspective

- Many litigation cases included both SEPs and non-SEPs, or SEP cases are countered with non-SEP, or otherwise
- SEPs: 'Good citizens but bad soldiers?' (free after Florian Mueller)

Trends and observations

8. Increasing ownership transfer of SEPs

Selected examples of transactions involving SEPs:

- Rockstar Bidco bought Nortel patent portfolio at auction. Some patents went to Rockstar investors (Apple, Microsoft, Blackberry, Sony, and Ericsson), others remained in NPE Rockstar.
- Motorola Mobility sold to Google (including a patent portfolios that is for US\$ 5 Billion in the books now)
- Eastman Kodak is seeking parties interested in acquiring its patents
- Ericsson sold SEPs to Research in Motion
- Nokia sold tranches of SEPs to MOSAID, Sisvel and Vringo
- IPcom acquired Robert Bosch SEPs
- Highpoint acquired SEPs originating from AT&T (various in between owners)
- HTC acquired SEPs from both Google and Hewlett Packard
- Acacia acquired SEPs from Adaptix
- Intel acquired SEPs(?) from InterDigital
- Apple acquired SEPs from Novell
- Intellectual Ventures teamed with NVIDIA to acquire SEPs from IPWireless

Trends and observations

8. Increasing ownership transfer of SEPs

Recent studies (Ménière, forthcoming) have found that at least 5% of all known SEPs at ISO, IEC, CENELEC, ITU-T, ITU-R, and IEEE have been transferred at least once. Of these:

44% = 'internal' transactions (transfer between entities of the same group)

15% = "Acquisition" (transfer immediately follows the acquisition of the initial SEP-owning entity by the group.

41% are 'bare' transactions

More transfer might go unnoticed

A lot of anecdotal evidence demonstrates that many transactions take place involving SEPs

New owner may have rather different objectives with SEPs, even if it did commit itself to FRAND. Quite a few transferred patents end up being litigated.

For large transfers, authorities (e.g. DoJ) now keep a special eye on SEPs and the consequences of transfer. But many below the radar.

Trends and observations

Result of trends

The market of IP transaction is getting increasingly diverse and complex:

- **Supply side:** more SEP owners per standard, more heterogeneous, new and old owners embracing more diverse business models (also opportunistic & aggressive), lots of dynamics
- **Demand side:** more heterogeneous set of implementers because of ICT becoming enabler in wide array of industries. Less overlap between supply and demand side actors.

IPR policies will need to deal with an increasing tension. Even when the large majority of stakeholders is benign and acting in good faith, policies will also protect against malign players.

The major challenge of all actors is to create solid, future proof IPR policies that strike a good (future) balance between different stakeholders (also those that are less represented in decision procedures)

Challenge of members/participants is to overcome short-term interest and act in long term interests of themselves and others.

I applaud IEEE of having been progressive up to now (ex-ante, pools). But now we have new challenges.

Overview of problems and solutions

In recent years, a lot has been said about supposed problems, and desired routes to solutions. Generally these are surrounded by a great agree of disagreement between stakeholders.

The next sheet contains a table that tries to summarize problems and solutions as they have been voiced.

By nature, such an overview is not exhaustive

For problem/solution pair, we could talk hours about whether the problem actually exists, whether the solution is good (effective / proportional / costs / balance between stakeholders) etc.

And we could talk hours about who is at move....

- Such as SSOs, Competition authorities (rules / cases), Regulators (rules / lobbying), Stakeholders themselves (self governance), Courts, etc...

In this presentation I will not discuss the full table. Instead, I will later focus on four selected areas where I think SSOs can/should something.

Concerns or potential problems	Suggested solutions
P1. Implementers have insufficient protection against hold-up and ambush.	S1. Rules stating under which circumstances patent owners are allowed to seek (preliminary) injunctive relief (or exclusion orders) for SEPs, or principles for when these are appropriate remedies. S2. Develop principles on royalty rate and royalty base, among other things, that help parties (including third parties like judges and arbitrators) to assess whether offers are FRAND. S3. Mandatory dispute resolution mechanisms or arbitration (e.g. in SSOs) before parties can turn to courts. Should or could address FRAND rate, validity, essentiality, and infringement. S4. More transparency on actual SEP ownership (update requirements for SEP disclosures, limiting use of blanket disclosures, stricter disclosure regime, notification of transfer, collaboration between SSOs and patent offices), allowing the construction of benchmarks. S5. Patent landscaping. S6. Rules that licensors are required to provide a cash-only option in certain circumstances (e.g. an actual dispute). S7. Anonymous database of royalty rates for benchmarking purposes.
P2. Implementer being disadvantaged in licensing negotiations due to information asymmetry on the extent and value of licensors' SEP portfolio.	A1 S4.
P3. Forum shopping, where IPR owners select specific litigation/legal venues that are favorable from their own perspective, e.g. German bifurcation system, ITC.	S8. Introduction and use of European Community Patent.
P4. Risk of incidental or categorical discrimination, e.g. against parties that own no SEPs.	A1 S6.
P5. Risk that access to SEP is made conditional for licensing out non-SEPs.	A1 S6. S9. Clarify reciprocity element of FRAND.
P6. Transaction costs when dealing with numerous SEP owners.	S10. Promote patent pools.
P7. Risk that after SEP transfer, the new owner does not consider itself bound to earlier licensing commitments (including situations with cascading transfers and blanket disclosures).	S11. Stronger SSO rules that bind future owners of SEPs to existing commitments. S12. Use of License-of-Rights (e.g. in new Community patents). S13. Promote use and harmonization of other law theories. S14. Rules on notification of transfer of encumbered patents.
P8. Risk that SEP commitments fall apart after owner becomes bankrupt.	S15. Clearer SSO IPR policy rules S16. Harmonize national laws. S17. Principle statements and specific actions (e.g. investigations in case of transfer after bankruptcies) by competition authorities. A1 S12.
P9. Over-inclusion of patented technologies in standards because participants have incentives to include them (and allow others to include them).	S18. Review standardization procedure & practices; more guidance and/or rules on whether or not including a patent technology is appropriate. A1 S5.
P10. Problems with access to licenses for patents deemed necessary in the marketplace but are technically speaking not SEPs.	S19. Widening scope of FRAND commitment/rules on reciprocity.

Avenue 1: Critical review of inclusion

- There are many strong incentives for parties to try to get their own patented technology into the standard
- There are usually relatively weak or no incentives in SSOs (TCs, WGs, etc.) to prevent such inclusion (exception: IETF)

A **general principle** could be that including patented technology is desirable if the technology brings significant benefits to the standard (higher performance, better price-performance ratio, lower power use etc.) and these benefits outweigh the costs (in the broadest sense)

But one should be **more critical of patents that bring little or no benefits** (such as patents on trivial solutions)

While it is understandable that standards with a broad functional scope may include many beneficial patented technologies, I find it hard to believe that some standards really require over 3000 patent families to meet the design requirements.

Avenue 1: Critical review of inclusion

Stylized scenario's of how patented technology becomes essential

Scenario	Time lap between patent application and inclusion	Technical merit
A. TC decides to include technology which was already long patented	Long	High
B. Work in TC raises technical challenges or trade-offs, and participants get engaged in additional R&D, possibly resulting in patented technology that are incorporated in the standard	Short	High
C. Participants 'push' their own patented technologies into the standard, even when it has little merit. They may bargain among other participants for support of inclusions, possibly giving favors in return	Short	Low?

How legitimate is concern for third scenario? Several public statements of insiders and practitioners pointed at this behavior, and several recent academic studies attempted to collect evidence.

Avenue 1: Critical review of inclusion

Paper: Bekkers, R., Bongard, R., & Nuvolari, A. (2011). *An empirical study on the determinants of essential patent claims in compatibility standards*. *Research Policy*, 40, 1001-1015.

Econometric study on basis of comparison between W-CDMA SEPs and a control group of comparable patents.

Using a LOGIT regression model, this study investigates the determinants of a patent being (claimed) essential.

While the technical merit of a patent indeed was found to be a determinant of a patent being a SEP, the strategic behavior of the patent owner being involved in the standard setting process was yet a much stronger determinant.

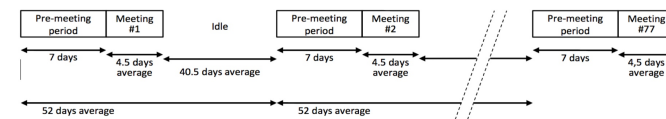
Conclusion: *'Being there helps to get patents into the standards, also when they are of trivial merit'*.

Avenue 1: Critical review of inclusion

Paper: Byeongwoo Kang and Rudi Bekkers (2013). *Just-in-time inventions and the development of standards: How firms use opportunistic strategies to obtain standard-essential patents (SEPs)*. 5th ZEW/MaCCI Conference on the Economics of Innovation and Patenting, Mannheim, June 3-4, 2013. (*)

Aims to provide deeper understanding of underlying inclusion processes

This paper analyzes 77 meetings of the '3GPP RAN1' group between 1999 and 2010, with 939 individual participants at these meetings, affiliated with 53 firms, owning 14,000 patents in relevant technology area, and 988 patents claimed as essential.



(*) For references, see last page of presentation

Avenue 1: Critical review of inclusion

Conclusions of the paper:

- This paper observed a very remarkable peak in USPTO provisional patent filings in *the few days proceeding a 3GPP meeting* by inventors that also participated in the meeting ('*Anticipatory patent filing*')
 - Similar peak *during meeting* ('*Combinatory patent filing strategy*')
 - > these two strategies are coined '**Just in time innovations**'
- The SEPs that originate in these peaks are of much lower technical merit than other SEPs
- There are typical patterns in what firms display this behavior (esp. VI and old incumbents)

Avenue 1: Critical review of inclusion

Should we be concerned? This behavior can have significant effects that are relevant to policy makers, competition authorities and end users:

- Higher barriers to entry of potential implementers
- Lower level of competition in the market
- Reduced incentive for 'real' innovators to invest in R&D
- Higher prices (when passed on along the business chain, and as effect of lower competition)

Recommendations to SSO:

- Collaborate with patent offices to ensure proper prior art determination
- Take critical look at inclusion processes. Not easy, but necessary. What incentives can provide counterweight to reckless inclusion?
- Need for awareness and guidance towards a more conscious technology inclusion process
- If not, we will continue fighting symptoms, not causes

Avenue 2: Blanket disclosures

In the SSO IPR policy survey of the US National Academies of Science (NAS), nine of the 15 investigated SSOs allowed blanket disclosures. (*)

Another study (EC, forthcoming) found that in eight large SSOs that allow blanket declarations, these represent **60 percent of all disclosures events**.

Arguably, by the times these policies were drafted, the possibility of making a blanket disclosure was strongly supported by large firms. In current policy discussions, these firms often argue that the search costs they would occur with specific disclosures would be obstructive, and even a reason to quiet SSO participation.

Paper: Rudi Bekkers and Arianna Martinelli, *Covering it up? Determinants of blanket declarations of essential patents in standard-setting organizations*. Paper accepted at the EMAEE 2013: 8th European Meeting on Applied Evolutionary Economics, 10-12 June 2013, Sophia-Antipolis, France. (*)

Yet, this represents only the view from one specific stakeholder. Interestingly, a recent empirical study considering blankets among 45,000 SEP disclosures at nine SSOs found that there is a **negative** relation between relevant patent portfolio size ('search costs') and the likelihood to submit a blanket disclosure. Instead, **blankets are associated with low quality portfolio's**.

(*) For references, see last page of presentation

Avenue 2: Blanket disclosures

Blanket from the perspective of different stakeholders

	Pro's of blanket disclosures	Cons of blanket disclosures
Working groups, standardization participants	1. An arguably higher willingness of IPR owners to participate and contribute, resulting in a better standard	3. Reduced understanding of SEP ownership 4. Less opportunities to make informed decisions or to design around.
Actual or prospective implementers	As (1)	As (3). 5. Asymmetric information , possibly leading to higher prices for access to technologies, higher legal and commercial uncertainty, and less opportunities to challenge what are believed to be unreasonable licensing demands. 6. Problems when SEPs in a blanket disclosure are transferred
IPR owners	2. Lower costs associated with disclosure procedure	As (3), for IPR by all other owners. 7. Making it hard to set its own optimal price.
Policy makers, public authorities	As (1)	As (3). 8. Harder to assess (and punish) anticompetitive behavior
Judges and juries	As (1)	As (3), (8)

Avenue 2: Blanket disclosures

Recommendation: SSOs should reconsider whether in the current context, allowing blanket disclosures sufficiently balances the interests of the different stakeholders.

They could take into account that:

- SEP owners already enjoy tremendous benefits. Additional costs because of policy changes are most likely negligible compared to these benefits.
- For SEP owners that do not wish to monetize their SEPs (and hence have fewer benefits), blanket disclosures could be allowed under the condition that a FRAND RF commitment is made.

Avenue 3: Completeness and accuracy of IPR databases

IPR disclosure databases play a central role in transparency

This information may serve several roles:

1. To allow Working Group members to make appropriate, informed choices concerning the inclusion of technologies (merit vs. costs, availability of licenses, etc.).
 2. To record which members and participants are subject to licensing obligations
 3. To serve as a trigger so that such patent holders can be requested or required to make a related licensing commitment;
 4. To provide information to prospective implementers regarding which companies they may want to approach to seek licenses, or know by whom they might be approached that require licenses,
 5. Allow implementers to assess the extent and value of the claimed patents
- For a wide set of stakeholders this is valuable information
- Above roles are different across SSOs
- Dilemma: different roles ask for different rules regarding timing etc.

Avenue 3: Completeness and accuracy of IPR databases

Yet the content of IPR databases is **known to be imperfect**

- Under and over disclosure
 - Various incentives in different directions
- Blanket disclosures (discussed above)
- Information not up to date
 - Final standard may differ from document on which disclosure was made
 - Final patent may differ from patent application, or be withdrawn etc.
 - Patent ownership changes are not recorded
- Limitative information on third party IPRs
- Limited information on which releases of standards are affected, which exact parts of the specifications (mandatory vs. optional parts, relevance for product categories such as infra, terminals, etc.)
- Problems with quality and accuracy of information (incomplete or erroneous patent information)

Avenue 3: Completeness and accuracy of IPR databases

Recommendations

SSOs are advised to reconsider the objective of their disclosure rules, to make that explicit, and to consider whether their current policy does a job job at it (e.g. timing of disclosure obligation).

- Disentangling commitments and disclosure (e.g. 'General Statements' at ETSI and ITU) can be helpful here.

SSOs are advised to investigate the **quality and accuracy** of the disclosed information. Both better rules / updating rules and collaboration with patent offices can increase quality and accuracy

SSOs are advised to address the **completeness** of disclosures. More specific disclosure rules can help in better identification of essential patents.

(And address blanket disclosure, see before)

Avenue 4: SEP transfers / bankruptcy

As shown before, SEP transfer is a very common phenomenon

Various incentives to sell:

- Monetary income (especially in times of financial stress or new market reality)
- Value decrease of portfolio is less than financial gains ($120 \neq 100 + 20$)
- Privateering
- Various incentives to buy:
 - All the benefits I already mentioned for SEP ownership.

New owner will often have different goals with their SEP ownership (recouping investment, from VI to NPE, etc.)

Avenue 4: SEP transfers / bankruptcy

Many SSO policies do not address transfer, and those that do are often not effective in doing so. Particularly:

- Solid in case of cascaded transfers (i.e. Highpoint case).
- Solid when original SEP owner made a blanket disclosure
- Solid when owner goes bankrupt

SSOs cannot wait for others to solve this. Applicable law is important but is very heterogeneous (and often hindered by guidance from SSO policies).

The members of SSOs will often find themselves in a dilemma with regard to implementing better transfer rules.

- On the long term, they will need such rules to to become victim of opportunistic behavior of others
- On the short term, however, they prefer to keep their asset value as high as possible for eventual sale (unencumbered asset has higher value)

Avenue 4: SEP transfers / bankruptcy

Recommendation: While it will not be always easy to find support from members, SSOs should pursue implementing really solid transfer rules, that are also effective with cascaded transfers and with blanket SEPs. This is in the long term interest of all stakeholders, including the SEP owners themselves

Recommendation: SSO should consider registering ownership changes and requiring SEP owners to provide such information

An elegant and simple solution is to have all FRAND obligations explicit in the commitment, not (also) in the IPR policy. And the commitment should include a clause that the SEP is not transferred to a new party that does not submit the same commitment itself.

Avenue 5: Clarification of principles of F/RAND

For a variety of reasons, SSO IPR policies are not usually not explicit what the goals of their policies are, and how F/RAND should be interpreted.

There is a wide variety of dimensions and many are left undefined in policies or commitments:

1. License fees
2. License base
3. Licensing conditions allowed or mandated (reciprocity – in many different ways -, defensive suspension, irrevocability, subject to standard compliance, geographic restrictions, etc.)
4. (Preliminary) injunctive reliefs / exclusion orders
5. Process (offer vs. outcome? Good faith obligation?)

See recent studies of US National Academies of Science (NAS)

Avenue 5: Clarification of principles of F/RAND

This does have consequences, especially when markets are dynamic and tension increases. SEP owners are expected to have more leverage from ambiguity than implementers, because their patents provide them with extraordinary bargaining power

- remember that, in contrast to a regular patent, a standard implementer has no option not to integrate the patented technology

Lack of clarity particularly affects:

- Implementers and prospective implementers
- Judges and competition authorities, who have little guidance into the intention and meaning of the agreement that was reached between patent owners on the one hand (committing to FRAND) and SSOs (willing to integrate technology if this commitment is made).

Recent legal cases showed magnitude 1,000 (!) differences in interpretation of stakeholders on what FRAND royalties are.

Avenue 5: Clarification of principles of F/RAND

While some competition authorities (FTC, EC) have now stated general principles (such as F/RAND being related to value of patent before inclusion) these efforts are limited in geographical scope and in reach.

Recommendation: SSOs are advised to state overall goals of their IPR policies and general principles on what F/RAND means.

While too much details might be counterproductive, general principles can be of great value to implementers negotiating a license, and judges / competition authorities investigating conflicts and disagreements.

Changes in society, markets and firm behavior do call for more solid systems to govern SEPs

SSOs have a responsibility here

Yes, it is hard to make changes

But SSOs should focus on the long term interests of members and other stakeholders, not their short term strategic conduct

I hope this talk provided some input for that discussion

Thank you!

References

Rudi Bekkers & Andy Updegrave (2012). **A study of IPR policies and practices of a representative group of Standards Setting Organizations worldwide**. Commissioned by the US National Academies of Science <http://sites.nationalacademies.org/PGA/step/IPManagement>

Plus a series of **10 background reports** on specific SSOs, including IEEE. <http://home.tn.tue.nl/rbekkers/usnas.html>

Bekkers, R., Bongard, R. & Nuvolari, A. (2011). **An empirical study on the determinants of essential patent claims in compatibility standards**. Research Policy, 40, 1001-1015. <http://tinyurl.com/bbn11rp>

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Rudi Bekkers and Arianna Martinelli. (2013) **Covering it up? Determinants of blanket declarations of essential patents in standard-setting organizations**. Paper accepted at the EMAEE 2013: 8th European Meeting on Applied Evolutionary Economics, 10-12 June 2013, Sophia-Antipolis, France. <http://ofce-skema.org/wp-content/uploads/2013/06/martinelli.pdf>

Other relevant publications: <http://home.tn.tue.nl/rbekkers>

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