

A study of IPR policies and practices of a representative group of Standards Setting Organizations worldwide

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Table of contents

1	Introduction.....	3
1.1	Standards setting organizations and intellectual property	3
1.2	Charter of the National Academies of Science	5
1.3	Selection of the studied SSOs	5
1.4	Methodology	7
1.5	This report is not an assessment of effectiveness or impact.....	8
1.6	A normative statement on including IPRs in standards	9
1.7	Nomenclature	11
1.8	What’s in a word?.....	12
1.9	Structure of this report.....	13
1.10	Disclaimer	13
2	Introduction to the SSOs	15
2.1	ISO, IEC and ITU	15
2.2	IEEE	16
2.3	ETSI.....	17
2.4	ANSI.....	17
2.5	IETF.....	18
2.6	OASIS	19
2.7	VITA	20
2.8	W3C.....	20
2.9	HDMI Forum.....	21
2.10	NFC Forum.....	22
2.11	Overview of the studied organizations.....	22
3	Policy objectives and organizational embedding	24
3.1	Policy objectives.....	24
3.2	How members/participants are bound by IPR rules.....	26
3.3	Dealing with affiliates	30
3.4	IPR policies and third parties	32
3.5	Reflection on binding measures	33
4	Defining essential IPRs	34
4.1	The definition of essential intellectual property rights.....	35
4.2	Reflection on the definition of essential IPR.....	47

5	Disclosure of essential IPR	48
5.1	General disclosure procedure	50
5.2	Disclosure in relation to organizations and individuals' knowledge	54
5.3	Timing of patent disclosure	58
5.4	Information to be provided in disclosures	60
5.5	Whether content of technical meetings is public or not	67
5.6	Reflection on disclosure: a dual process	68
6	Licensing commitments	71
6.1	General commitment procedure	71
6.2	Specified and sought licensing modes or covenants	88
6.3	Transfer of patents encumbered with licensing obligations	92
6.4	Ex-ante disclosure of most restrictive licensing fees	94
6.5	Link to patent pools	97
6.6	Reflection on licensing commitments	98
7	Conclusions and reflection	100
7.1	Policies often have no explicit goals	101
7.2	No definition of RAND	103
7.3	Lack of guidance on appropriateness of including patented technology and risk of over-inclusion	104
7.4	Still a restricted degree of transparency	107
7.5	Large variation in detail and specificity of policies	110
7.6	Problems of legacy	110
7.7	Policies struggle with patent transfer issues	112
7.8	In summary	113
	About the Authors	114
	Annex 1: Detailed notes for the overview tables.....	115

1 Introduction

1.1 Standards setting organizations and intellectual property

The idea that the implementation of standards could require the use of patented technology is hardly new. As early as 1932, ANSI's Committee on Procedure made the following recommendation:

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.¹

The recommendation was adopted unanimously, and marked the creation of what may be the first formal intellectual property rights (IPR) policy relating to standards. In any case, the recommendation addressed several topics that remain key elements in the current debate on IPR in standards.

We have come a long way since 1932. It was not until the late 1980s, however, that the incorporation of patented technology in standards began to attract wider attention. This broader scrutiny may have been in large part the product of the IPR issues that surfaced regarding GSM, a mobile technology that would eventually become extremely successful.² Unfortunately, the hosts of the GSM standards development process had not yet adopted effective IPR policies.³ Nor was this unusual, because in the 1990s, many if not virtually all standards setting organizations (SSOs) lacked established IPR policies. Among those that did have policies in place, most were summary in nature, and many have therefore been amended and updated in later years.

It is hardly a surprise that the greatest evolution in both the substance as well as the detail of IPR policies has arisen in the area of information and communications technology (ITC). This development has been driven by a variety of factors, most of which relate to the density of patent filings in this area of commerce, the speed with which innovation and productization occurs in these domains, and the degree to which achieving interoperability and “network effects” has become essential to realizing new commercial opportunities.

¹ ANSI Minutes of Meeting of Standards Council, November 30, 1932. Item 2564: Relation of Patented Designs or Methods to Standards.

² For early issues on IPR in standards including GSM, see Bekkers, R. N. A. (2001). *Mobile Telecommunications Standards: GSM, UMTS, TETRA and ERMES*. Boston, MA: Artech House.

³ GSM standardization started in the European organization for PTTs called CEPT, and was moved to ETSI on the establishment of that organization in 1988.

In consequence, the terms of IPR policies in this area have become critical, again for a variety of reasons. IPR policies impose obligations on participating members of an SSO when a standard under development might necessarily result in the infringement of patent claims owned or controlled by these members. The justification for imposing such obligations is to protect implementers and users of the standard against certain types of patent owner conduct that might inhibit the uptake of the standard, or which might constitute anticompetitive or other conduct deemed to be undesirable in the eyes of regulators and other policy makers. As a result, the relative weight or lightness of the obligations imposed can have a meaningful impact on the willingness of potential members to join in the standards development process, or to contribute effort and technology to a given standardization project. In the eyes of antitrust and competition regulatory authorities, properly crafted IPR policies and supporting processes can provide private sector safeguards against unlawful behavior. And last but not least, IPR policies provide important guidance for judges, who need to understand the obligations that participants have voluntarily assumed when they later come into conflict, one with another. For the many parties involved, the stakes are high.

In recent years, there has been a wave of lawsuits in which patents play a prominent role, involving large firms such as Apple, Samsung, Motorola, Nokia, Google, HTC, Microsoft, Kodak, and Research in Motion. Often, these patents include claims that any implementer of a standard would necessarily infringe in the course of creating a compliant product or service. Such “essential claims” result in what have come to be known as “standards essential patents”, or SEPS. Companies that believe they do not own many SEPS may find themselves at a significant cost disadvantage to competitors that do (and which charge significant royalties for the use of their SEPs). Increasingly, companies in the mobile device sector with few SEPs and other crucial patents have sought to increase holdings through purchases, often at quite astonishing prices. For instance, in 2010 a consortium that included Apple, Microsoft and RIM purchased an important part of the patent portfolio of the Canadian firm Nortel for US\$ 4.5 billion after it entered bankruptcy. That portfolio is believed to contain a large number of SEPs relating to 3G and 4G technologies, among other standards. In 2011, Google purchased Motorola Mobility for US\$12.5 billion, and many commentators opined that Google’s main goal was to acquire ownership of this company’s patent portfolio, which is known to include many SEPs. These transactions provide ample evidence of the value that companies attach to patents with essential claims, although it is difficult to assess the value assigned by the purchasers to the SEPs acquired relative to the many other patents included in the purchased portfolios.

It is important to note that the value of an IPR policy is measured as much by the precision of its wording and the efficacy of the process it prescribes as by the specific obligations that it imposes. As can easily be imagined, a well-constructed policy is essential both to achieving achievement of the goals enumerated above as well as permitting SSO members to make clear decisions with confidence. Conversely, a poorly conceived and executed IPR Policy can lead to confusion among the conscientious, game playing by the less than honorable, and the abuse of consumers

after the marketplace has become “locked in” to the standard in question. It can also dramatically increase the likelihood and cost of litigation.

1.2 Charter of the National Academies of Science

Late in 2011, the US National Academies of Science (NAS) established a committee to investigate the impact of patents in standards.⁴ This committee commissioned several investigative papers, of which the study at hand is one. The terms of reference for this study are reproduced in Box 1.

Box 1: Original terms of reference for this study

Main topic: IPR policies and practices of a representative group of SSOs worldwide. Factors to consider: a) scope of disclosure (essential patents, likely essential patents, simply that a participant holds patents likely to be essential, or no specific disclosure but licensing commitment, etc.); b) licensing commitment (essential patents entailed in final standard or broader; cover patent applications); c) timing of disclosure (mandated or encouraged); d) patent searches (required or implied); e) form of disclosure; f) licensing assurance (patent holders choose from RAND/FRAND, etc. or pre-determined by SSO); g) licensing terms (allow reciprocity, scope of use, ex ante disclosure, patent pooling); (how many disputes have arisen, how resolved); i) anti-trust considerations; h) how communicated and enforced j); measures of success-wide or quick adoption of standards.

Some of these aims were understood to be difficult to achieve (see also Section 1.5). Given the committee’s express desire to commission a fact-based analysis of IPR policies and practices, the focus and reach of the study was therefore adjusted in some respects in consultation with NAS representatives.

1.3 Selection of the studied SSOs

It would be hard to state with precision the number of standards setting organizations that are active at any point in time worldwide, because new collaborative efforts are launched on a weekly basis. In this regard, it is important for us to note that there is no universally acknowledged taxonomy for distinguishing one type of standards development organization from another. Because these differences are not relevant to this study, except as specifically noted below, we purposely use the acronym SSO (for “standards setting organization”) to refer to all organizations, incorporated and otherwise, that collaboratively develop standards, including both “traditional” standards development organizations (often referred to as SDOs) as well as the myriad consortia, consortia, alliances, Special Interest Group (SIGs) and other organizations that have so extensively proliferated since the early 1980s.

The most complete list of SSOs active in the ICT area is maintained by one of this study’s co-authors; currently, it lists over 840 entries, with more organizations being added on a regular

⁴ For more information on this committee, see <http://sites.nationalacademies.org/PGA/step/IPManagement/index.htm>.

basis. The great majority of these SSOs have IPR policies of varying scope, specificity, and stringency.⁵

Obviously, those constructing a study such as this must decide which SSOs to cover (and why), as well as settle upon both a useful as well as a feasible depth of examination. In consultation with the NAS and committee members, twelve SSOs were selected to serve as the subjects of extensive examination.⁶ Broadly speaking, the goal was to include a cross section of SSOs representing the full range of SSO “business models” (e.g., traditional standards organizations as well as modern consortia), geographic membership (national, regional and global), and technology and sectoral focus (from narrow to extremely broad).

This final sample set agreed upon comprised the International Organization for Standardization (ISO), International Electrotechnical Commission (IEC), International Telecommunication Union (ITU), IEEE (originally the Institute of Electrical and Electronics Engineers),⁷ European Telecommunications Standards Institute (ETSI), American National Standards Institute (ANSI), Internet Engineering Task Force (IETF), Organization for the Advancement of Structured Information Standards (OASIS), VITA⁸ (originally VMEBus International Trade Association), World Wide Web Consortium (W3C), High Definition Multimedia Interface (HDMI) Forum, and Nearfield Communications (NFC) Forum.

While we have provided brief introductions to each SSO for purposes of orientation (in Section 2), readers wishing to know more about the background, activities and scope of these organizations are encouraged to visit their Web sites as well as the ample resources that can be found regarding most of them on the Internet, and elsewhere.

A few additional notes also bear mention in relation to the SSOs selected. The first three organizations on this list share, at a high level, a common patent policy, although there are distinct differences in process and otherwise beneath this common umbrella.⁹ It should also be noted that

⁵ The ConsortiumInfo.org list, compiled and maintained by Andrew Updegrave, is categorized by type of organization, industry, technical domain, and geography. A link is provided to the IPR policy of each organization, where that policy is publicly available. See www.consortiuminfo.org/links/index.php#categories. In 2011, GTW Associates published a table at its website referring to the IPR policies and associated IPR related documentation of 48 SSOs. See www.gtwassociates.com/answers/IPR/policies.html.

⁶ More specifically, the main selection criteria were: (1) include organizations with the largest global impact and relevance in the field of standards and IPR, (2) diversity of approach, (3) diversity in size of membership, scope of activity, and number of standards produced, (4) diversity in temporal scope (e.g., institutionalized organizations addressing a domain vs. SSOs created to develop and maintain a single standard), (5) diversity in technology area addressed, (6) diversity in geographic reach, and (7) diversity in regional context and policies. Obviously, if only a small number of organizations can be analyzed, it would be impossible to truly fulfill all these criteria at the same time. With that said, the SSOs selected were considered by the authors and the NAS to represent a sufficient range and variety to permit this study to be capable of providing useful results.

⁷ Standards development activities under the IEEE umbrella take place in an affiliated organization called IEEE-SA. Since the standards development community usually refers simply to the IEEE, we will follow the same convention throughout this report.

⁸ Formally speaking, setting of standards does not take place in VITA itself but in VSO, the Vita Standards Organization, but this distinction is rarely noted in the marketplace. For this reason, we will refer to VITA throughout this report.

⁹ One of the representatives of the three organizations put it this way: *‘The three bodies have a common policy, but each can also have additional, different IPR policy elements, so it’s not a joint policy.’*

these bodies appear above in random order and that, for reasons of clarity and ease of reference, the same order has been maintained in the tables throughout this paper.

The inclusion of ANSI in this study also requires an explanatory note. As described in greater detail in Section 2.4 below, ANSI is not itself a standards setting organization. Rather, it is a national, non-governmental organization with a broad range of activities supporting standards development in the United States, and the standards-related interests of America abroad. As part of this role, ANSI accredits U.S. national SSOs with respect to their standards development activities. If these SSOs fulfill certain criteria (including IPR related criteria), they can create specifications that ANSI will adopt as American National Standards. For the purpose of this report, we will refer whenever possible to the ANSI's IPR requirements for accredited SSOs as if they were those of an actual SSO. And in point of fact, some ANSI accredited SSOs simply incorporate the one page ANSI baseline policy into their bylaws or other governance documents.

1.4 Methodology

This section briefly explains the method we applied to compile the information digested in this report. As a first step, we searched the Web site for each of the SSOs selected (see previous section) for the latest versions of all formal documents (or sections included in documents) that could be construed to constitute an IPR policy. The range of documentation came in a variety of forms, including Statutes, Bylaws, and Rules of Procedures, as well as specifically designated, formal IPR policy documents. In addition, we searched these Web sites for all other relevant material we could find, such as templates to submit licensing statements, documents with policy clarifications, tutorials, guidelines, FAQs, etc. We also examined patent disclosures or licensing statements, when available, at these Web sites. All IPR policies were retrieved between June 5 and July 16 of the year 2012.

In the second step, we analyzed each of these policies using a pre-determined format. The elements in this format were based on NAS Committee members' input, as well as the IPR policy elements listed in the ABA Standard Development Patent Policy Manual,¹⁰ published by the American Bar Association Section on Science and Technology to assist standards bodies in drafting IPR policies and SSO members in understanding the implications of such policies. Based on this template, we prepared a detailed report on each SSO. While doing so, we prepared lists of questions and requests for clarification where we encountered what we believed to be ambiguities in the materials examined. Our analyses, with the related questions, were forwarded to appropriate SSO representatives with a request that they confirm the accuracy of our analyses, and further assist us by responding to our questions. We also invited the recipients to offer any additional comments. Almost all of the SSOs contacted were able to assist us within the time available, and

¹⁰ Contreras, Jorge L. (ed.). (2007). Standards Development Patent Policy Manual. American Bar Association (ABA), Section on Science and Technology.

we are very grateful for their assistance.¹¹ We then incorporated the feedback received into this paper. Any statements, clarifications, or comments received in this way are clearly marked in this report and in the supplement report as provided by a representative of one of these organizations. We also received valuable feedback from members of the NAS committee that reviewed earlier versions of this report. We are also grateful for their input.¹²

For our final report, we wanted to avoid endless lists of references to literal quotes in the various policies we examined. At the same time, we believe it is important that readers be able to verify not only our observations, but also observe where in the text of a given document a particular provision appears. For that reason, we have made the full set of materials upon which this report is based available at <http://home.tn.tue.nl/rbekkers/nas>. We advise that readers consult these supplement reports when searching for specific references to policies.

1.5 This report is not an assessment of effectiveness or impact

We wish to emphasize that this report does not aim to draw conclusions on the appropriateness of specific policies or individual policy terms, nor to assess the effectiveness or impact of any individual policy, or indeed of IPR policies in general, as these issues were not included in our charter. Addressing questions such as these in an authoritative fashion would also require a different approach, such as collating the views of a representative set of organizations in each stakeholder category, such as upstream technology developers and downstream product implementers, vertically integrated companies, small to medium enterprises (SMEs), component providers, system integrators, service providers, other intermediate users, governments, and, of course, end users. We further realized that diverse views and interests would exist within such groups as well, which our methodology would not uncover. In any case, an effectiveness assessment would eventually require the interests of various stakeholders to be weighted on a comparative basis, and this would unavoidably require normative decisions – something we believed to be inappropriate in the context of this study.

Moreover, different contexts can call for different solutions. Every SSO operates within the unique and often significantly divergent realities of its specific technological domain and commercial practices; geography, business model and other important differentiators exist as well. Moreover, different classes of stakeholders have different needs and goals, and these stakeholders vary from SSO to SSO. Market sectors sometimes evolve distinctly different cultural

¹¹ We would like to formally identify and thank the following individuals that responded to our inquiry (and their respective staff): Nikos Volanis and Antoine Dore (ITU), Holger Gehring (on behalf of both ISO and IEC), Maïssa Bahsoun and Dirk Weiler (ETSI), Patricia A. Griffin (ANSI), Jorge Contreras (on behalf of IETF), Jamie Clark (OASIS), Ray Alderman (VITA), Jeff Jaffe (W3C), Charlene Wan (HDMI Forum) Bruce Rogers (NFC Forum). Responses were provided by the all studied SSOs with the exception of IEEE, which elected not to provide feedback.

¹² We would particularly like to thank Tim Simcoe, who provided guidance throughout the production of this report, as well as Marc (Sandy) Block, Jorge Contreras, Richard Gilbert, and Amy Marasco each of whom provided comments and, in some cases, reviewed and confirmed our analysis of data.

and moral attitudes towards standards development as well, and some SSOs (such as the IEC, ISO, ITU and ANSI) that have been operation for many decades have accumulated a long institutional legacy. Finally, while royalty requirements for patents with essential claims are common in some industries, there may be less common in others, and SSOs active in other sectors may exercise strenuous efforts to avoid the requirement of royalty or other fee payments entirely.¹³ An IPR policy that fits perfectly in one setting might therefore be unlikely to work as well in another, making any ranking or grading of IPR policies on an absolute or comparative basis highly problematic at best.

Having said this, our report does on occasion discuss the implications of various choices in individual IPR policies to include, or not include, specific terms where we have felt such commentary to be justified and useful. And occasionally, we also discuss matters of impact or effectiveness from a general perspective in order to highlight the relevance of certain terms to the achievement of identified goals. But these examples should not be seen as an effort to present a balanced and comprehensive assessment of the impact or effectiveness of the IPR policies as a group.

1.6 A normative statement on including IPRs in standards

For the avoidance of doubt, the authors wish to emphasize that we have not sought to imply, or in our analysis or presentation to apply, any assumption that the assertion of patent rights in connection with standards development is either appropriate or inappropriate, and particularly as a general proposition.

Many commentators and stakeholders have vigorously made the case that that including patented technology in standards can benefit the efficacy and value of a standard, and, as a result, ultimately prove to be in the public interest. Indeed, in many technical fields, a substantial percentage of standards-relevant innovation has invariably already been, or is in the process of being, patented at the time that a standard is developed. Incorporating these patented inventions can result in a standard with better performance (in whatever relevant dimension), improved cost-effectiveness, or a better match with other design requirements. Indeed, it is increasingly possible (as patents continue to proliferate) that some design requirements can not be met at all without including patented technology. It is important to note also that the potential to include patented technology often creates incentives for participation in standard-setting, and also attracts parties that can contribute valuable technology, knowledge and insights. In addition, allowing standards to incorporate patented technology can create or keep in place long-term incentives for parties to be engaged in research and development, particularly if these parties do not implement the

¹³ As a side note: with convergence this may be more challenging in the future.

technology themselves (which may be upstream technology developers or so-called “non-practicing entities (NPEs)).¹⁴

It is important to note that the prevalence of royalty, or other fee, bearing license requirements is often very sectoral. For example, the owners of patented inventions that are incorporated into standards in SSOs active in certain areas (e.g., Internet and Web standards) almost never elect to seek payment for the use of their innovations, even where the IPR policies in effect would permit them to do so. This is usually attributed to the indirect benefits that they expect to receive from the inclusion of their technology in the final standard, or from the more rapid spread of new products or services into the marketplace that is hoped to occur. On the other hand, in areas such as consumer electronics and telephony, the payment of royalties to multiple SEP owners is assumed to be the result of standards development efforts.

In the most basic sense, the benefits of including patentable inventions in standards should be considered against the costs of incorporating such technology. These costs include the ensuing licensing burden (both procedural as well as economic) on the implementers, but also the various legal risks associated with implementing patented technologies in products, and especially where the owner of a technology is not subject to a licensing obligation under the IPR policy in question, or where ambiguities in the IPR policy leave room for subsequent disputes. There is also the risk that an SSO might discover, after a standard has already been released and widely adopted, that not all essential claims are available on terms that the marketplace finds to be acceptable. In such a situation, the SSO may need to withdraw or modify an existing standard, resulting in considerable costs for the companies involved and society at large. Where this is a practical impossibility, due to the extent that industry has already become “locked in” to implementing the standard, lengthy and expensive litigation between the owner of the technology and an (often random and unfortunate) sampling of implementers can be the result.¹⁵

Suffice it to say that the topic of inclusion of patented technologies, the terms upon which such technology is offered, and the ultimate value of such inclusions are, and will continue to be, the subjects of heated debate.

¹⁴ Non-Practicing Entity is a term that refers to organizations that license, but do not implement technologies in products or services. In this broad sense, the definition also includes universities and many other organizations, although the term NPE is most often used to refer to companies that derive their primary, or sole, income from licensing patented technology. It is important to stress, however, that the designation NPE does not necessarily imply that the entity employs the type of very aggressive patent strategy employed by thus far small number of companies often referred to as Patent Assertion Entities (or, less kindly, as “Trolls”).

¹⁵ There is a substantial economic literature on the potential for “patent hold up” to occur in connection with standard setting. For a review of this literature see, for example, Joseph Farrell, John Hayes, Carl Shapiro and Theresa Sullivan (2007), “Standard Setting, patents and Hold Up” *Antitrust Law Journal*, vol. 603, pp. 603-670.

1.7 Nomenclature

The field of standards development is rife with terminology and abbreviations. Often, two (or more) SSOs will each use different words for what is essentially the same or almost the same object or concept. For the sake of clarity and comparability, this report attempts to use a set of terms commonly used by many, but by no means all, SSOs. Where appropriate, we ‘translated’ the wording in specific policies into this terminology. However, the terms we have selected are simply the product of an exercise in convenience, and should by no means be seen as “better” in some way than others that may be as commonly employed across the standards development landscape.

For similar reasons of readability and simplicity, we have also sometimes disregarded differences between terms that we find less relevant for our report. In short:

- When we refer to Licensing Declarations, we also mean to include Letters of Assurance (LoA), Written Assurances, Declaration of Licensing Position, Licensing Statements, Licensing Undertakings, Licensing Commitments and other similar declarations.
- When we talk about companies or firms – in the sense of IPR owners – we also mean universities, public research organizations, administrations, individuals, and all other entities that can own intellectual property rights.
- When we speak about standards, we refer to a wide range of different terms applied to similar material, such as Standards, Specifications, Recommendations, and Technical Reports. Unless noted otherwise, we also include documents such as drafts and working versions of these standards.
- When we refer to Working Groups (WG), this term is meant to include Technical Committees, Technical Subcommittee, Projects, Task Forces, and so on. Importantly, however, it should be noted that the phrase Special Interest Groups, or SIGs, usually refers not to a committee within an SSO, but to the SSO itself.

For similar reasons of convenience, we usually use the generic term “IPR policy” to refer to all of the terms and supporting material of an SSO, wherever it may be found in the given case.

However, in the case of inconsistencies among documents, we recognize the primacy established, or implied, by the respective terms or relationship of the documents in question.¹⁶

In this report, we have taken care to use the phrase ‘essential claims’ rather than precise terms such as ‘essential patents’. This is because a properly crafted IPR policy will rarely impose licensing obligations to claims other than those that are in fact essential, even where they are found in the same patent. (See also Section 4.1.8). Where an IPR policy does not make this distinction, the possibility of long and costly litigation can be the result. Because we believe that

¹⁶ Not all SSOs view certain documents the same in terms of whether they are binding. For example, the ITU-T states that its patent policy guidelines are as normative as the patent policy itself, while other SSOs would explicitly state that the former is subject to the latter.

precision is essential in order to make an IPR policy effective, we wish to be similarly responsible in our use of language here. The exception is our use of the term SEP in those contexts in which the use of this term (for better or worse) has become normative.

Because this report has been prepared for a U.S. committee, we have elected to uniformly use the term RAND for Reasonable and Non-Discriminatory (terms and conditions) rather than the interchangeable term FRAND (for Fair, for Reasonable and Non-Discriminatory), which is more commonly used in Europe.¹⁷ However, several of the policies reviewed in fact use the term FRAND. In recent years, additional terms relating to licensing terms have arisen which will be utilized throughout this study. For example RAND/FRAND refers to a commitment to provide a license for compensation. While commonly the shorthand reference ‘royalty’ is used to refer fee-bearing licenses, in fact there exists a wide variety of fee models (one time payment, yearly payment, unit-based payment, value-based payment, payment included in the fee that addresses a wide variety of patents, and more). In principle, each of these payment modes, if properly implemented, could be consistent with a RAND undertaking.^{18, 19} Where no right to charge a fee is reserved, the obligation is often referred to as ‘RAND-RF’ (for RAND-royalty free) or ‘RAND-Z’ (for RAND-zero). In this study, we will use the former.

Finally, where multiple types of intellectual property are addressed by an IPR policy (most typically, copyrights in addition to patents), or where a comment addresses more than one type of IPR, we use the term IPR to represent such intellectual property collectively. (In Section 4.1.1 and 4.1.2 we provide detail about the degree to which policies also cover copyrights and others forms of IPRs than patents.)

1.8 What’s in a word?

We would like to make separate mention of a variation in usage among IPR policies that made our analysis more difficult. Obligations under policies by their nature are created only to the extent that the terminology utilized is sufficient to that task.²⁰ However, people can attach different meaning to the same words, such as – in the case of IPR policies – the words ‘shall’ and ‘should’. Should they be understood to mean the same thing? Not necessarily, but that may be down to interpretation. The IEEE displays good practice: it defines in detail what the word

¹⁷ It is fair to state that the inclusion of the word ‘fair’ in Europe and its non-use in the United States is purely a matter of convention, and does not reflect any difference in meaning or intent. In fact, Contreras has argued that ‘commentators have been unable to agree on any substantive difference between RAND and FRAND commitments.’ Contreras, J. (2011). An Empirical Study of the Effects of Ex Ante Licensing Disclosure Policies on the Development of Voluntary Technical Standards. National Institute of Standards and Technology (NIST).

¹⁸ Some disputed licensing fee structures, such as reach-through licenses, might not be compatible with RAND. But we have not heard of the use of such license forms in the context of standard essential patents.

¹⁹ There is also an interesting discussion whether value-based fee structures are compatible with RAND if the value calculation is based on a much ‘wider’ device in which the standard only provides a small part of the overall functionality, like a radio communications unit mounted in a car. It is outside the scope of this report to provide a deep analysis of this discussion.

²⁰ Behavior, course of conduct and custom can also affect the interpretation of obligations.

‘should’ is intended to mean.²¹ In the case of IEEE, we therefore know what is intended with assurance. Another SSO, however, may use the word ‘shall’ for one part of a disclosure obligation and ‘must’ in another part, which leaves uncertainty whether these two obligations are equally strong, and also whether the use of words such as ‘should,’ ‘must’ and ‘shall’ are meant to have separate meanings, or were simply used interchangeably without forethought. Where such terms were undefined, we chose what seemed the most appropriate interpretation in the context of other policy statements and explanations.²²

1.9 Structure of this report

As indicate above, Section 2 provides a short introduction of the SSOs under study. Section 3 discusses the aims of IPR policies, and how these policies are embedded in the formal documentation of the standards setting organizations in question (and therefore how the policies bind certain parties (or not). Section 4 discusses how policies define essential IPR, which types of IPR are included, and what types of IPR may be excluded.

When we come to the core of IPR policies, we note that almost all policies share two common, main elements: (1) disclosure of patents with essential claims and (2) licensing commitments relating to essential claims. While these two elements are often implemented through the same process steps (SSOs can request statements that are both disclosure and commitment at the same time), they are essentially quite different elements that impose different burdens. We therefore deal with them separately: Section 5 deals with patent disclosure, and Section 6 addresses licensing commitments. Finally, Section 0 offers conclusions and reflects on our findings.

1.10 Disclaimer

This report has been prepared to the best of our knowledge, and aims to be neutral. Analyzing policies is a matter of interpretation, and while we took care not to interpret where there was room for doubt, we may have overlooked or misunderstood information in a given case. Our review was also limited to materials that were either available to us on line, or which were supplied to us by SSOs in response to our requests for confirmation and assistance. While we are grateful for the

²¹ IEEE-SA Standards Board Operation Manual at 6.4.7: “The word should indicate that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others; or that a certain course of action is preferred but not necessarily required (should equals is recommended that).”

²² Intent is often difficult to determine under IPR policies in other ways as well. One of the authors (Updegrave) has frequently encountered situations in his representations of SSOs and SSO members where policies, or sections of policies, have been borrowed from other SSOs and then combined, or where an originally cohesive policy has been amended without careful attention, in each case leading to inconsistencies and uncertainties. In other cases, the processes laid out in a policy may not in fact be faithfully followed by the SSO, or there may be inconsistencies between related policy documents without an indication of which document is intended to take precedence. The moral of the story is that in order for an SSO to achieve its IPR-related objectives, all relevant documentation must be carefully maintained at the text level, and faithfully implemented procedurally by appropriately trained staff and members.

efforts of those SSOs that responded to requests for assistance (resulting in the correction of a variety of errors and misunderstandings on our part), any remaining errors in this report are the fault and responsibility of the authors alone, and not of the organizations under study.

Similarly, the conclusions and views expressed in this report are those of the authors alone, and do not necessarily represent those of the NAS Committee that commissioned this study.

Needless to say, this report does not aim to provide legal advice; please consult a legal advisor or your own counsel if you require interpretation of any of the contents of this report.

2 Introduction to the SSOs

This section provides short introductions to the twelve organizations (and 10 distinct IPR policies) that are central to this report. In these descriptions, we introduce some of the IPR policy features that will be discussed in later sections. The intention of this section is to provide contextual background to this study, especially for readers that may be less acquainted with each of these organizations. Those already familiar with these organizations may wish to skip this section and move on to the next.²³

2.1 ISO, IEC and ITU

The **International Organization for Standardization (ISO)**, **International Electrotechnical Commission (IEC)**, and **International Telecommunication Union (ITU)** (sometimes referred to for convenience as the ‘Big Is’), are each, large, formally recognized standards setting organizations, and each has a worldwide focus. They were founded in 1947, 1865 and 1906, respectively. Formal membership in each organization is at the national level by the private or public sector entity that is globally recognized as a nation’s authoritative standards representative, although often participation is wider and can include companies and individuals. The ITU is distinguished by the fact that it is a treaty organization formed under the aegis of the United Nations.

ISO covers a very wide number of technical areas, historically excluding the field of electrotechnology, which was primarily addressed by the IEC. However, when each organization became interested in emerging computer technologies, the potential for competition was resolved by forming Joint Technical Committee One (JTC 1), within which both organizations could collaborate in these domains. Standards development is undertaken through extensive cooperation with national standards bodies, which carry out the national approval stage procedure for ISO and IEC standards, among other tasks. ITU has – at least up to now – focused only on telecommunications; it develops standards but also performs other important tasks, including in the area of radio spectrum allocation.

While each of these organizations previously maintained its own IPR policy, they together adopted a common, albeit brief, patent policy in 2007, as well as a set of related Guidelines. This resulted in a shared and harmonized set of rules. However, the joint policy is not intended to preempt the topic of IPR entirely: text can be found at the end of the Guidelines that grants each

²³ By way of disclosure, one of the authors (Updegrave) has had significant involvement with the following SSOs included in this study: (a) he is a Director of ANSI and a member of the ANSI Intellectual Property Rights Policy Committee (IPRPC), (b) he represented OASIS in connection with the 2005 revisions to its IPR policy described below, and (c) he has represented NFC Forum since its inception, including in connection with the development and implementation of its IPR policy and related documentation. The other author (Bekkers) has conducted commissioned studies for ETSI.

SSO permission to include organization-specific material. ITU, for instance, added an additional element to its policy for early disclosure and licensing commitments for a party's own contributions²⁴). IPR-related rulings can also be made outside the Common Policy and Guidelines, and the ITU has issued Software Copyright Guidelines, and Guidelines on the inclusion of (trade)Marks, whereas ISO and IEC do not. Furthermore, the actual procedures and the published IPR databases of each organization are notably different.

2.2 IEEE

Founded in 1884 as the American Institute of Electrical Engineers, the **IEEE** later changed its name to the Institute of Electrical and Electronics Engineers. Later, the organization broadened its activities in such a way that it decided to retain its acronym but jettison the name itself. IEEE's Constitution defines the purposes of the organization as "scientific and educational, directed toward the advancement of the theory and practice of electrical, electronics, communications and computer engineering, as well as computer science, the allied branches of engineering and the related arts and sciences." Unlike many other SSOs, IEEE is a professional association with over 300,000 individuals as members. It is perhaps best known as a journal publisher: the organization contends that it produces 30 percent of the world's literature in the electrical and electronics engineering and computer science fields, publishing well over 100 peer-reviewed journals. It also sponsors or cosponsors more than 300 international technical conferences each year.

As earlier noted, standards development in IEEE takes place in the IEEE Standards Association (IEEE-SA). While its historical roots are as an ANSI accredited SSO, IEEE has become global in its membership and influence. In 2005, IEEE had close to 900 actively maintained standards, with more than 500 under development. Its most influential ICT standards include those known as Ethernet, Wi-Fi²⁵, Firewire, and Bluetooth.²⁶ The formal names for these standards are, respectively, IEEE 802.3, the IEEE 802.11 series, IEEE 1394, and IEEE 802.15.1. Interesting recent standardization efforts in the wireless area include WiMax and the ZigBee standard for low-distance, low-power communications.

It is worth noting that IEEE standards development activities are not limited to the area of ICT. In fact, standards issued by IEEE are used in fields and industries as varied as power and energy, instrumentation and measurement, mobile and stationary batteries (e.g. the IEEE 1625 standard for laptop batteries), nanotechnology, organic electronics, and transportation. It should also be noted that while industry has elected to pursue many efforts relating to a given domain within IEEE, companies have elected to launch efforts in the same domains elsewhere, often in consortia

²⁴ This is the 'General Patent Statement and Licensing Declaration for ITU-T or ITU-R Recommendation' discussed in Section 6.1.2.

²⁵ Note that WiFi is a registered trademark of an independent membership consortium known as the WiFi Alliance, which develops certification tests for compliance with the 802.11 series standards, and promotion of such devices.

²⁶ The IEEE 802.15.1 'Bluetooth standard' was ratified by IEEE but developed outside of IEEE by the Bluetooth Special Interest Group (SIG).

newly created for that purpose. For example, when a group of companies wanted to develop and launch a new short range wireless standard, they opted to launch another SSO included in this study, the NFC Forum.

2.3 ETSI

The **European Telecommunications Standards Institute** (ETSI) was established in 1988. At its inception, it took over (from CEPT) the development of GSM, a standard for mobile telephony that would eventually become one of the most successful technical standards of all times. Later, a broad range of new standards were added to its work program, including GSM's successor, the 3G UMTS/W-CDMA specifications, which were developed via the joint efforts of six SSOs acting together in the 3rd Generation Partnership (3GPP). ETSI's focus has always remained in the field of telecommunications, however, true to its original intent. While formed to function as a European regional body (and explicitly recognized as such in European regulations), ETSI's influence has expanded over time (like that of IEEE), and its standards are adopted on a worldwide scale.

In ETSI, IPR matters have resulted in heated debates in well-attended meetings open to all ETSI members. ETSI has a quite extensive IPR policy that continues to evolve, (e.g., with the recent addition of innovative elements such as general licensing commitments that are permitted to be made early in the development process (see Section 6.1.2). ETSI cooperated with the European Patent Office (EPO) to create an extensive upgrade of its IPR database, which includes thousands of patent disclosures. The evolution of its policies has not been wholly voluntary, however. At times, the European Commission (EC) has been strongly involved, arguing for certain changes (see Section 5.2.2, for instance) deemed by the EC to be necessary to protect competition.

2.4 ANSI

The **American National Standards Institute** (ANSI) is a non-profit organization with several missions: it oversees the development of voluntary consensus standards in the United States by SSOs that it accredits, seeks to coordinate U.S. based standards development activities generally, and represents U.S. standards related interests globally. As such, it is not a standards setting organization itself, although the SSOs that it accredits have developed thousands of standards that are eligible to be recognized by ANSI as "American National Standards". Many of these standards, in turn, have been tendered to one of the three Big Is for consideration and adoption as global standards. ANSI's criteria for accreditation include certain IPR policy elements. For example, ANSI defines a 'baseline' set of IPR rules that accredited organizations need to meet, although substantial freedom is permitted as regards the actual scope, details and other aspects of an SSO's individual IPR policy, as long as they do not conflict with the minimum requirements established by ANSI.

The ‘minimal IPR policy’ of ANSI is quite short, although there is a clarifying document that gives it more flesh. ANSI staff members are available to provide guidance to SSOs on issues relating to whether a given IPR policy term does or does not meet the baseline requirements, and ANSI rules and policies relating to IPR matters in turn are subject to ongoing internal review by established committees.

For the purposes of this report, we have as much as possible analyzed the ANSI IPR requirements as if they were the policy of an organization directly engaged in standards development.

2.5 IETF

The **Internet Engineering Task Force (IETF)** grew out of early standardization efforts that arose in connection with the development of the Internet in the late 1960s and 1970s. Over time, this loosely-coordinated group of academic, industrial and governmental engineers began to refer to itself as the Internet Engineering Task Force. Today, IETF activity is funded by and conducted under the auspices of the Internet Society, a District of Columbia non-profit corporation based in Reston, Virginia and Geneva, Switzerland. It has two elected governing bodies, the Internet Architecture Board (IAB), which operates relatively independently of IETF standards development, and the Internet Engineering Steering Group (IESG), which oversees standards-setting at IETF. IETF develops Internet standards, and is perhaps best known for the TCP/IP protocol suite. The TCP/IP protocol is possibly one of the most used and most successful protocols in the world, and also provides the basic building blocks for many other system standards, such as 3GPP.

Involvement and contribution to IETF processes is on individual basis, and there is no formal membership or membership environment in the traditional sense. Interested persons become active in IETF by participating in discussions on mailing lists, contributing drafts relating to technology, or simply showing up at meetings. It has rightly been observed that, “technical competence is the only requirement for contributing; there is no such thing as membership.” Nor is there any formal membership voting mechanism for the approval of standards: to gauge support for proposed standards, IETF uses the principle of ‘rough consensus and running code’, and consensus at in person meetings is sometimes measured by assessing the volume of group humming (!). In short, IETF practices are, in large part, the evolutionary legacy of the rather specific culture and attitude of the individuals that were involved in the early development of the Internet. Not surprisingly, this legacy has had an impact on the IETF IPR policy, which is rather different from the policies of other SSOs.

The IETF policy today states that, in general, IETF prefers to adopt technologies not encumbered by known IPR claims.²⁷ If patented technologies are included, it is generally because it is felt that

²⁷ RFC 3979 (IETF, 2005, p. 12) states: “In general, IETF working groups prefer technologies with no known IPR claims or, for technologies with claims against them, an offer of royalty-free licensing.”

the patented technology in question is sufficiently superior to alternatives with fewer IPR claims and/or claims subject to free licensing that the technical benefits of inclusion outweigh potential licensing costs.²⁸ The IETF IPR policy also includes a requirement that patents and patent applications known by IETF participants and held by their employers and which cover technology under consideration by IETF must be disclosed as early in the development process as possible.

2.6 OASIS

The **Organization for the Advancement of Structured Information Standards** (OASIS) is an organization that focuses on the development, convergence, and adoption of e-business and web service standards. It was formed with a more limited charter in 1993 under the name SGML Open. Like the W3C, it is one of the hundreds of SSOs (most often referred to as ‘consortia’) that have been formed since the early 1980s outside the hierarchy of the historical standards development infrastructure. One reason for its inclusion in this study is the fact that through a series of revision of its IPR policy, OASIS developed a new and more flexible approach to assigning obligations relating to essential claims. There were several incentives for this evolution. First, whereas in many technology areas the existence of a RAND policy is seen as perfectly acceptable, some of the areas in which OASIS is active often do not, and this bias increased over time. Second, the increasing breadth of OASIS’s technical activities and the number of its active working groups continued to increase. The result was that a “one size fits all” policy became increasingly inflexible to cover the full breadth of the SSO’s activities, some of which involved standards addressing licensing fee tolerant commercial areas and some of which did not.

The result was the adoption in 2005 of a ‘multi-track’ IPR policy that allowed a working group to be chartered under a rule set that either did, or did not, allow participating members to require payment of licensing fees in connection with an otherwise RAND commitment. As with the W3C, adoption followed a lengthy (two year) development and approval process. The OASIS policy was further amended in the years that followed, and now includes four optional tracks, one of which is crafted to particularly facilitate the implementation of standards in software made available under all of the commonly used open source licenses.

According to representatives of OASIS, the addition of IPR tracks oriented towards the issuance of royalty-free standards with greater flexibility of implementation in open source software created a more ‘license-centric’, with decreased reliance on disclosure rules. This shift of focus was believed to provide greater protection for users of OASIS standards.

²⁸ IETF, 2005, p. 12.

2.7 VITA

VITA, originally named the VMEbus International Trade Association, began its existence as a trade association focusing on a specific interconnect technology called VMEbus. Since then, VITA standardization activities have expanded to a number of other areas involving electronics and connectors for high-demand environments such as avionics, military and industrial applications. Standards setting does not take place within VITA itself, but in an affiliated entity called the VITA Standards Organization (VSO). As with IEEE, the industry commonly refers (as do we) to the non-standards setting affiliate.

One reason for the inclusion of VITA in this study is the fact that it is one of only two SSOs (IEEE being the other) that has received the non-binding approval of the U.S. Department of Justice to provide for *ex ante* disclosure of patent licensing terms by its members prior to voting on approval of a standard. Unlike IEEE, which merely permits its members to disclose licensing terms *ex ante*, VITA requires members to make *ex ante* disclosure of the most restrictive licensing terms (including economic terms) that the owner of an essential claim reserves the right to require.

VITA differs from the average SSO in other respects as well. For example, a VITA representative reported to us that VITA believes that an SSO's duty to its membership as a whole is more important than its duty to any one individual member. This stands in contrast to most consortia, which are mindful that virtually all of their revenues are derived from membership dues, and are therefore unlikely to take actions against a member that is likely to be viewed as objectionable. The VITA copyright rules applicable to its standards are also novel, in that they permit members of working groups to leave VITA if they wish, and continue to work on the same project in another SSO.

VITA has been particularly ambitious with respect to the duties and responsibilities it has assumed, perhaps to a greater extent than any other SDO. For example, while other SSOs invariably leave enforcement of obligations assumed under their IPR policies to their members, VITA declared that it will enforce all essential claim disclosure terms and conditions, and any other rights under agreements the organization may hold with the owners of essential claims, as well as take action against what it believes are frivolous assertions of essential claims. VITA's IPR policy also requires that members submit to binding arbitration when conflicts arise over essential claims.

2.8 W3C

The **World Wide Web Consortium** (W3C), as its name implies, develops standards used in connection with the Web, among other technologies. It was founded by the original inventor of the Web as we know it, Sir Tim Berners-Lee, after he left the European Organization for Nuclear

Research (CERN) in October, 1994. He still leads the organization today, although not on an operational basis.

Early in the development and deployment of the Web, and partly as a result of Berners-Lee's decision not to patent its underlying technology, a culture of free license rights for Web infrastructure developed and took firm hold. Concurrently, open source software became increasingly commonly used to provide the software 'stack' supporting the servers that enable the Web's existence. The result was the adoption by W3C in 2003 of an extremely license fee intolerant Patent Policy. Due to the very large membership of the W3C and the degree of effort that went into constructing a policy that could ultimately be approved by its members, the W3C policy's approach (and sometimes its wording) has been used as a model by other SSOs wishing to achieve similar goals, providing another reason for the inclusion of the W3C policy in this study.

As argued by a W3C representative in a response to our questions:

A royalty-free patent policy is well suited to Web standards. The Web is basic infrastructure, at global scale, that relies on the broadest distribution possible of its technologies and specifications. Web standards are implemented and used by a range of parties including commercial and non-commercial developers, proprietary and open-source / Free Software modes, and large, small, and individual participants. Royalty-free standards set low IP and no cost barriers to universally interoperable implementation and use, making them a good fit with the globally distributed, permission-free nature of the Web.

2.9 HDMI Forum

Like VITA, the **HDMI Forum** focuses on a single technical goal, in this case, specifying a compact audio/video interface that enables the transfer of uncompressed digital audio/video data from one compliant device to another. The standard is suitable for use in televisions, DVD and Blu Ray players, video cameras, computers, and other devices.

The HDMI technology and the related standard (originally known as HDMI 1.4b) were created by a group of seven companies, beginning in 2003. While it is not unusual for a new consortium to be formed around a technology and a technical specification that was already in existence at the time of formation, HDMI Forum is unusual because the ongoing efforts of the Forum are contractually limited to the maintenance of the HDMI interface standard. Moreover, implementation of the standard continues to require the payment of royalties to the seven founders.²⁹

²⁹ This is accomplished via a collective licensing programme administered by HDMI Licensing, LLC, an entity formed for that purpose.

The proprietary foundation of the HDMI Forum is echoed by the Forum's IPR policy, which provides that any *further* development of the standard within the Forum will be protected by agreements that each participant must sign. Under those agreements, participants must agree not to assert any essential claims against implementers of the standard. In other words, the IPR policy does not cover the original standard, but only additions to the standard.

2.10 NFC Forum

The Near Field Communication (NFC) Forum is a non-profit consortium formed in 2003 to develop, maintain and promote the use of its short-range wireless interaction specification in consumer devices. A typical application could be a mobile phone held close to a payment terminal that utilizes the NFC to exchange information with, and facilitate a payment using, the terminal. Like VITA and the HDMI Forum, its focus is on a single technology-enabled goal.

In addition to its standards development and promotional activities, the Forum supports a global branding and certification campaign to help enable and support the interoperability of compliant mobile devices of every type, embedded radio tags, and other elements of supporting IT infrastructure. All NFC Forum members must respond to requests for disclosure and licensing of essential claims, whether they own such claims or not, thus minimizing the chance of later assertion of essential claims. (Note that members do, however, have the freedom not to license all of their essential claims).

2.11 Overview of the studied organizations

In Table 1 we provide an overview of some attributes of the above organizations. As noted earlier, there is no broadly acknowledged taxonomy of SSOs, and some SSOs have evolved in ways that have blurred their historical categorizations. Moreover, some nations and regions (e.g., Europe) are currently reexamining their rules for deciding which SSOs meet their requirements for government procurement and which do not. Consequently, although the table below distinguishes only between 'formal' SSOs and those that are 'consortia', this division is intended to indicate only whether a given SSO is directly linked into the traditional hierarchy of national standards organizations and ISO/IEC/ITU. Similarly, we are not employing a specific test to define what 'large' and 'broad' mean, other than in a relative sense within the set of SSOs studied, with 'large/medium/small' referring to the number of members, and 'broad/medium/narrow' referring to the breadth of the covered technological domains.

Table 1: Overview of the studied organizations

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Characterization	Formal SSO	Consortium	Formal SSO	Accreditation organization; does not develop standards	Consortium	Consortium	Consortium	Consortium	Consortium	Consortium
Size	Large	Large	Large	Large	Large	Medium	Medium	Large	Small	Medium
Scope	Broad	Broad	Medium	Broad	Narrow	Medium	Narrow	Narrow	Narrow	Narrow
Geographical focus and membership	World-wide	World-wide	European/Worldwide	United States	World-wide	World-wide	World-wide	World-wide	World-wide	World-wide
Technical area (roughly)	ITU: Telecommunications IEC: electrotechnology ISO: all except the above (1)	ICT, power, energy, nanotechnology (more)	Telecommunications	Any technology or service	Internet standards	e-Business and web service standards	High-demand electronics and connectors	World Wide Web	A specific video standard	Standards for near field (wireless) communications

3 Policy objectives and organizational embedding

3.1 Policy objectives

When examining any type of policy, the first question that comes to mind is what the policy aims to achieve. Perhaps surprisingly, few SSO IPR policies have explicitly stated goals or objectives. Usually, at best, a few objectives are mentioned on web portals or in FAQs, but these are often broad, and the ‘official’ objective of the policy in relation to which it could be assessed, is not always clear. Sometimes there are snippets of information – often buried somewhere in the policies – that provide hints about their policy objectives, or the SSO’s attitude towards including patented technology.³⁰

Some of the goals IPR policies *could* have include the following (some of which are mutually exclusive):

1. Promote widespread implementation of standards without unnecessary IPR-related complications;
2. Determine and/or ensure the availability of licenses for essential IPRs (or reduce uncertainty about such availability);
3. Ensure each essential IPR is available at a reasonable fee,³¹ and otherwise on reasonable and non-discriminatory terms;
4. Ensure that the cumulative set of all essential IPRs is available at a reasonable, combined fee;³²
5. Ensure that all essential IPRs are available for free and otherwise on reasonable and non-discriminatory terms;
6. Ensure that each essential IPR is available at a fee that bears a reasonable relation to the economic value of the technology;

³⁰ For instance, the OASIS policy includes text that explicitly encourages the submission of existing, patented technical work. In contrast, ANSI notes that inclusion of patented technology may be justified if ‘technical reasons justify this approach’.

³¹ While the notion of “reasonable” pricing is widely used in IPR policies, it is rarely defined. Many economists define a “reasonable” price in terms of the *ex ante* value created by including a patented technology in a standard (i.e. before the standard is widely implemented), but this definition is not universally accepted, and may be difficult to apply in practice. Readers interested in the economic perspective on standards are referred to: ABA Section of Antitrust Law. (2011). Handbook on the Antitrust Aspects of Standards Setting (Second Edition). Chicago (IL): American Bar Association.

³² Note that there is a subtle but significant difference between (2) and (3). Even if condition (2) is met, it is not necessarily true that (3) is also met. Condition 3 not only requires commitment rules, but also mechanisms to prevent the ‘over-inclusion’ of protected technologies. One could compare this to a product that incorporates many expensive raw materials or components: even if each of these is ‘reasonably’ priced (in line with its economic value), the resulting product might be prohibitively expensive.

7. Ensure that (non-free) patented technologies are only included after deliberate consideration of their merits and costs;
8. Ensure fair compensation for the holders of essential claims (or the opposite – that all included technologies will be available without charge);
9. Ensure sufficient incentives for the holders of important technology to participate in and contribute to the standardization process;
10. Ensure an equitable distribution of the economic benefits of standardization among different types of stakeholders, including upstream technology developers, downstream implementers, vertically integrated companies, small to medium enterprise (SMEs), component providers, system integrators, service providers, other intermediate users, governments, and end users.
11. Ensure transparency and certainty relating to which patents claims are essential claims under the standard;
12. Limit or eliminate the potential for bad-faith participants to ‘game’ the system;
13. Enable contractual legal rights that good faith participants can assert in court to defend themselves against bad-faith participants; and
14. Avoid unnecessarily burdensome IPR-related processes, both within SSO activities and as regards members concerns regarding their patent portfolios.

An immediate observation to be made regarding the potential goals noted above is that some are difficult or impossible to pursue without risking inadvertent violation of laws relating to antitrust and competition, while others certainly help to prevent competition law concerns. Another is that concerns and burdens can vary widely as between, on the one hand, members with large patent portfolios and many employees active in many SSOs, and on the other, companies with few, or no patents, and few employees engaged in SSOs. The combination of these factors alone, without more, can significantly limit which of the above goals can be pursued, and which, in a given instance, will be pursued.

In any event, one of the problems arising from the lack of stated goals in a policy is that it is hard to assess whether the policy incorporates the right mechanisms to accomplish the actual goals of the SSO. For instance, a number of policies hint at the fact that IPR disclosure is important for making appropriate choices regarding the inclusion of technology. At the same time, however, it is not always clear whether the disclosure process in place is appropriate to fulfill that role, leaving the evaluator with the question whether the former can be considered as a policy goal or not, and whether, perhaps, the difficulty of achieving consensus on given policy terms resulted in a compromise between (for example) the goal of achieving a useful level of disclosure and licensing commitments and the imposition of burdens on members with large patent portfolios.

Beyond failing to articulate clear goals, many IPR policies fail to provide clear definitions of critical terms, notably the concept of “reasonable and non-discriminatory” (RAND) terms and conditions. This may provide flexibility for firms that typically engage in bilateral licensing negotiations, but can also lead to disputes where one side interprets the RAND commitment as a

promise to negotiate and the other invokes specific principles such as preventing hold up or royalty stacking.³³ (We will return to this topic in Section 7.2.)

3.2 How members/participants are bound by IPR rules

While each IPR policy instantiates decisions about what parties shall or shall not do, should do, might do, are encouraged to do, are requested to do (all of which can be found in actual policies) and more, some policy elements will always seek to have a binding nature. Otherwise such policies would produce, at best, information that is likely to be incomplete (which in fact is the case with those remaining legacy policies that limit their imperative language to the words ‘should’ and ‘are encouraged’).

Ensuring that some parts of a policy are binding upon relevant parties is not necessarily easy to accomplish. The options here will depend on the nature of the relationship between the SSO and the party in question. *Table 2* illustrates three major elements of IPR policies where we believe binding rules are important, and shows how such obligations (for instance on members or participants) arise in the various SSOs. (See below what we mean by Commitments, written by a capital C). When a certain aspect could not be directly found in the policy, but was clarified by an SSO representative in a response to our questions, the answer is indicated by accolade brackets { } in the table.

Note that there is an important relationship between disclosure and the nature of a licensing commitment. In the most extreme case, where the owner of an essential claim states that it will not require an implementer to secure a license, there is no reason to require the owner to identify the essential claim or the affected portion of the standard.

³³ Economists use the phrase ‘hold up’ to refer to a situation where a licensor’s price reflects the value of investments in implementation (i.e. it is greater than what a prospective licensee would have been willing to pay *ex ante*), and ‘royalty-stacking’ to a situation where several independent licensors charge prices that exceed in aggregate the optimal monopoly price for the licensing of the same collection of essential patents.

Table 2: Binding legal obligations

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
How disclosure obligations arise	ITU: via Resolution / Recommendations (1) ISO/IEC: via Directives [All binding on 'participants']	Via Bylaws, binding on members	Via Rules of Procedure, binding on members	Left to the accredited SSO	Contributors are ' <i>deemed to agree</i> ' to RFC {There is a legal relationship between IETF and its participants} (2)	Members are bound by signing a Membership Agreement	Members are bound via Policies and procedures (3) {Third parties may be bound by the act of reading a draft standard} (4)	Members are bound by signing a Membership Agreement	Via Bylaws, binding on members through a signed agreement	Signed membership application binds members to IPR Policy and Rules of Procedures
How obligation to make licensing commitments arise	As above	As above	As above	Left to the accredited SSO	n/a (request, no obligation)	Depends on licensing mode specified in Working Group charter (licensing by default, see § 6.1.1)	As above	n/a (licensing by default, see § 6.1.1)	n/a (licensing by default, see § 6.1.1)	As above
How Commitments as such are binding	Declarations ('Declaration')	Declarations ('LoA') by member or non-member	Declarations ('declaration') by member	Declarations ('LoA') by patent holder	Declarations, if made, are on whatever terms disclosed by the patent holder	Licensing commitment arises automatically by becoming a member of a Technical Committee	Commitment disclosed to members via 'Declaration Form'	Licensing requirements arise automatically through participation in Working Group	Commitments arise automatically through membership	Declarations (various forms)

For the numbered notes, see Annex 1. Accolade brackets { } indicate that is not defined in the policy but it was clarified as such by a representative of the SDO.

In organizations that have multiple classes of membership, IPR rules apply equally to all relevant classes (e.g., those that have a right to participate in the standards development process), regardless of membership class. As indicated above, the details of rules, including disclosure rules and member obligations to make licensing commitments (where applicable), can be found in a variety of types of documents. From a legal perspective, the obligation to obey IPR rules and obligations may be: (a) enumerated in detail in some type of membership application or agreement that becomes a legal contract between the member and the SSO (or, in the case of an unincorporated SIG, among the members themselves); (b) arises through a membership application that references the specific rules as they are found in an external document(s); or (c) included in Bylaws or policies that are not explicitly referenced in any document signed by a member, but which are intended to be legally binding as a result of applying, and being accepted, for membership.³⁴ Until recently, only a small number of organizations (such as IETF) have

³⁴ Those bodies that have their IPR policy as Statutes, Bylaws or Rules of Procedure, typically have more detailed procedures defined in 'Guidelines,' 'Rules of Procedure' or similarly named documents. These are typically referred to in the official policy, and these supplemental documents can usually be more easily amended than the official policy that they supplement (e.g. by a Board vote, rather than a member vote, or by Board vote without a lengthy waiting period prior to taking effect).

existed that do not have a formal membership structure. These SSOs have explored other ways to create binding obligations (see below). More recently, very lightweight development efforts have been launched on line, usually for the purpose of developing a single protocol using a Wiki-based process modeled on open source development processes. In most cases, these efforts have only later (if at all) considered the IPR implications of their collaborative efforts.³⁵

The licensing commitments/obligations that members give with respect to individual standards usually arise from what we call ‘Commitments’: statements issued by patent holders committing them to certain licensing obligations. SSOs variously call such Commitments ‘Declarations’, ‘Letters of Assurance’, ‘Written Assurances’ and so on. The precise legal status of these statements, and those that can hope to be the beneficiaries of such statements, is part of a legal discussion going beyond the scope of this study, but the validity of the entire global standards development infrastructure is based on the assumption that any implementer of a standard is an intended beneficiary of a commitment to license (some IPR policies limit the obligation to license to only other members). Many SSOs explicitly state in the text of these declarations that these are not patent licenses as such, but merely a commitment to enter into patent licenses.³⁶

For three of the organizations studied, licensing commitments arise directly from membership or participation in a given Working Group (for ‘licensing by default’ see Section 6.1.1). It is not a coincidence that the three SSOs that employ this technique each have a narrow technical focus. As a generality, SSOs with a broad range of activities tend to have IPR policies that impose obligations only on those members that have a sufficient interest in a given standard to ‘opt in’ to the Working Group undertaking its development.

Several of the SSOs studied merit further comment:

- ISO/IEC/ITU: The ITU’s legal structure is quite complex, due to its status as not only a standards setting organization but also a treaty organization supported by a United Nations agency. More detailed information on this structure is available in our supplement report on ITU/ISO/IEC (see Section 1.4). To a somewhat lesser degree, ISO and IEC also have complex legal structures. These differences, as well as differences in the types of members involved, makes the creation of a comprehensive IPR policy in any level of detail difficult. For example, in the ITU, members are typically commercial firms or other organizations (e.g. Sector Members, Associates and academia), while in IEC and ISO the members are the national bodies responsible for standardization in given countries (National Committees in IEC, Member bodies in ISO). These differences make it difficult to simply refer to ‘members’ in a common policy. As clarified by representatives of all three organizations,

³⁵ Several efforts have been launched in the past several years in an effort to provide a suitably lightweight legal framework within which such efforts can be pursued while still giving proper attention to IPR concerns. One such effort is the OpenWeb Foundation, the site for which can be found at: www.openwebfoundation.org.

³⁶ This is significant, because if Commitments were to be considered to be patent licenses as such, the litigation options of owners of essential claims might be more limited.

disclosure obligations are binding upon participants in these organizations. In the ITU, participants would typically be representatives of members, whereas for ISO and IEC, a specific phrasing³⁷ was adopted to ensure that both direct participants as well as those participating in Working Groups hosted by national standards organization (a usual way to be involved in these bodies) would be included in the definition.³⁸ Whether such indirect participants can be legally bound through this language is a topic that we will return to in Section 3.4.

- In ANSI, the binding nature of disclosure (if any) will depend on the rules of the specific ANSI-accredited SSO. But these rules must be compatible with the ANSI baseline policy and the associated Guidelines. Representatives of ANSI have clarified that obligations in ANSI-accredited SSOs (such as disclosure, if implemented as an obligation) will typically come from membership or from participation in that SSO. As we have observed in connection with the to ITU/ISO/IEC, the literal language of the ANSI policy may seek to obligate parties not bound by legal obligations. In ANSI, binding licensing commitments are to be made via a Commitment ('Letter of Assurance').
- The IETF situation is somewhat complex, because instead of supporting a formal membership structure, this organization allows any individual to become involved at any time. The IETF IPR policy is defined in one of its main deliverables, known as RFC 3979.³⁹ The policy states that contributors are 'deemed to agree' to this RFC. An IETF representative states that: *"We believe that the IETF's procedures are 'sound' and that the IETF policies are binding on all IETF participants, as well as their employers/sponsors under well-established equitable and legal principles."*⁴⁰ At the same time, the IETF representative did indicate that different interpretations may be given to what a 'participant' means in IETF (this is important, because participants carry specific obligations), and that this issue will probably be addressed in the next revision of the policy.⁴¹
- OASIS has a licensing by default design: licensing obligations as to specific patent claims and standards arise directly from the policy, not from a separate declaration (see Section

³⁷ The (perhaps somewhat cryptic) phrasing is as follows: *"In the case of ISO and IEC, [any party participating in the work] includes any recipient of a draft standard at any stage in the standards development process."*

³⁸ ANSI responses to study questions. See also the supplementing reports on this subject.

³⁹ Literally: 'Request for Comments', although that name, which has historical roots, is somewhat misleading to those who are unfamiliar with IETF practices.

⁴⁰ An IETF representative clarified: *"[there is a "formal relationship" between IETF and its participants]. Participants register for meetings, sign attendance sheets, receive notifications of policies (via the web site and a widely-distributed document known as the "Note Well" document, and must indicate their acceptance of the Note Well document prior to registering for an IETF meeting or mailing list. While IETF does not have a formally-constituted membership, we maintain that a legal relationship, and a set of binding legal arrangements, is in place between IETF and its participants."*

⁴¹ An IETF representative clarified: *"Views may differ on this question. Some may feel that participation implies active participation, but others feel that simply attending an IETF meeting or joining a mailing list may be enough to constitute participation (and thus trigger disclosure obligations)."*

6.1.1). The policy specifies that obligations arise through enrollment in a specific Working Group ('Technical Committee'). As earlier noted, the specific obligations that will apply with respect to a given Technical Committee are specified in its charter.

- In VITA, obligations arise from membership and the execution of a membership agreement. VITA also takes the position that legal obligations can arise from reading draft standards. Non-members do not ordinarily have access to the text of VITA draft standards. Should they nevertheless obtain a copy, there is a cover sheet that outlines obligations intended to arise from reading that document, including compliance with VITA's IPR policy. If a member wishes to show a draft document to a non-member, it is required to seek permission to do so from a VITA executive, and if permission is granted, the member is required to inform the non-member about VITA's IPR policies and, the fact that by opening and reading the document, the reader will become bound to obligations under this policy.

Many new consortia include specific licensing commitments in Commitments, and some of the SSOs in the study set employ this approach as well (e.g., IEEE and NFC Forum). SSOs may also require analogous undertakings to be signed by non-members providing input or contributions. Typically, the language in these documents is duplicated in the IPR policy that applies to the activities of the SSO generally, and it is important for those responsible for maintaining such documentation to ensure that all such duplicative language remains strictly consistent.

Over the last year, a question has arisen regarding whether the obligations assumed by the owner of an essential claim remain binding on a successor owner (the question became of acute interest when Nortel, a prominent Canadian telecommunications company with a very large patent portfolio, entered bankruptcy, leaving the issue in effect up to the discretion of the judge presiding over the bankruptcy proceeding. The IPR Policies of recently formed consortia now commonly seek to ensure that transferred patents remain subject to licensing commitments. Accordingly, we examined the IPR policies of the study set to determine whether any obligations assumed by a member-owner of an essential claim are made binding on the new owners of transferred patents, who might or might not be 'members' or 'participants' themselves. We will return to this issue in Sections 6.3 and 7.7.

3.3 Dealing with affiliates

Where an SSO policy ascribes duties and rights upon its members, a potential problem arises with respect to member companies that have complex organizational structures. A company might own all of its patent rights through a subsidiary, for instance, in which case if an IPR policy extended no further than the actual member, the parent company might not be required to disclose or

license any essential claims owned by the subsidiary, even if it had knowledge of those claims.⁴² It is therefore important for an SSO to ensure that no IPR-related goals can be undermined by such practices. A common way of dealing with this is requiring that the IPR policy will be binding not only on the legal entity that becomes a member, but also upon all of its ‘Affiliates’, where Affiliates is defined as all direct and indirect subsidiaries, parent companies, and sister companies (e.g., companies owned by a common parent) as indicated by ‘control’ (e.g. where more than 50% of the voting control is owned by the entity in question and/or that the entity has the power to appoint more than half of the board of directors of the Affiliate).

While it is obvious that it would be useful to bind all members of a corporate family of affiliates, such a practice also imposes burdens that some companies with complex corporate structures may not find acceptable. This issue presents itself immediately if the SSO wishes to capture all affiliates by a legally binding obligation. Because a subsidiary cannot bind its parent, the only way to attain the desired goal is to require the ultimate parent entity to countersign the membership agreement in addition to the subsidiary that wishes to exercise membership rights. Not infrequently, a potential member will assert that it is effectively impossible to secure the necessary signature, leaving the SSO one of three choices: waive the signature (thereby giving special treatment to a single member); do without the membership of the applicant; or maintain a process whereby exceptions can be handled on a non-discriminatory basis that require the applicant company to commit to safeguards that will protect other members from any attempt to ‘game’ the system. The IPR policy of NFC Forum provides an example of this type of mechanism.⁴³ Other SSOs avoid the issue by providing that the IPR policy applies only to the member and its direct and indirect subsidiaries.

Table 3: Dealing with affiliates

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Specifies whether affiliates are also bound by policy (B3)	Not specified	Yes (1)	Yes	Left to the accredited SSO	Not specified (2)	Yes	Yes	Yes (3)	Yes	Yes

For the numbered notes, see Annex 1. Indications in **bold, italicized** text refer to the corresponding section in the underlying analysis documents.

With the exception of ITU/ISO/IEC and IETF, all policies have rules on affiliates (see *Table 3*). Virtually all are well defined. IETF presents a special case, as its participants are individuals and not firms. IETF individual members are, however, held responsible for disclosure of IPR held by their employer or sponsor. For instance, a participant is required to disclose not only IPR owned

⁴² The reach of SSO rules can also have economic consequences, where dues are scaled based upon corporate revenues. In such cases, well-crafted SSO rules require that the aggregate revenues of the entire corporate family be taken into account, to prevent avoidance of fees through assigning a subsidiary to be the member of record.

⁴³ A NFC Forum representative furthermore clarified that: “*In order to avoid undue burdens for members that are part of complex corporate structures, an applicant can apply for an exception, provided that it proposes an acceptable mechanism for “fire walling” the knowledge of the member from its affiliates*”

by herself, but also IPR held by her employer. The IETF is silent with respect to affiliates of an employer or sponsor.

3.4 IPR policies and third parties

From the earliest days of standards development, it became apparent that an almost unavoidable limitation of any IPR policy would be that it cannot bind every potential holder of essential IPR. Necessarily, IPR policies can only legally bind the members of the organizations that have adopted them and, as just discussed, their controlled affiliates.

Several bodies have explored ways to create binding obligations for other parties. One is via Commitments, when IPR holders (which may be members, participants, or neither) are asked to voluntarily sign a legally binding agreement. OASIS employs a pro-active approach common to many SSOs that permit non-members to make contributions to its technical process: it stipulates that submissions made by non-participants (which may be non-members) must be accompanied by a ‘feedback license’ that contains binding elements. If this feedback license is not supplied, the submission will not be considered.⁴⁴ Short ‘guest’ agreements are also common in standards development, under which non-member attendees agree to be bound (for example) by all of the terms of the host SSO’s IPR policy as if they were representing a member.

In summary, unless addressed through an approach such as those just described, IPR policies cannot be expected to be binding on other IPR holders.

That said, some of the policies examined include language that, taken at face value, purports to have such an effect. For example, the ITU/ISO/IEC Common Patent Policy states that *any* IPR owner is bound, whether member or participant or not.⁴⁵ Similarly, the ANSI guidelines require that *all* owners of essential claims issue a licensing statement.⁴⁶ In each case, representatives of the SSOs in question clarified that in the end their policy does not aim (and cannot be) binding to all patent owners. Ideally, this language will be deleted when the opportunity arises to avoid creating confusion among those feeling entitled to rely on the literal text of the policies in question.

⁴⁴ Because public comments on draft standards posted for public comments are to be encouraged, and are also less likely to result in the incorporation of essential claims, the Feedback License does not put public commenters to the burden of disclosing any essential claims, although it does include the more important component of imposing licensing obligations. See ‘Comment 81’ on the following discussion: https://www.oasis-open.org/private/member_review_log.2005-02-01.php.

⁴⁵ The single page ITU/ISO/IEC Common Policy at §3 states: “[...] *the patent holder has to provide a written statement to be filed at ITU-TSB, ITU-BR or the offices of the CEOs of ISO or IEC, respectively, using the appropriate "Patent Statement and Licensing Declaration" form*” (emphasis added). Under the *disclosure* rules, however, the policy refers specifically to “*any party participating in the work of the Organizations*”.

⁴⁶ The ANSI Guidelines at II state: “*In particular, the identified party or patent holder must supply the ANSI-accredited standards developer (“ASD”) with either [...]*” (emphasis added). See the supplement reports for more details.

3.5 Reflection on binding measures

Thus far, we have addressed parties (members and non-members) that wish to have an impact on the development of a standard, and therefore have a reason to agree to the obligations imposed by an IPR policy. But what of all the other potential owners of essential claims throughout the world that may be disinclined to provide RAND assurances upon the request of an SSO?

In such a case (and particularly after a standard has become widely adopted), implementers of the standard in question have no alternatives beyond entering negotiations with the patent owner, or asserting that the claim(s) in question were either invalidly granted, or that they were not in fact being infringed. And, of course, the SSO could also seek to reengineer the standard to render it non-infringing. Perhaps surprisingly, the need for such action has arisen relatively infrequently, in part because the entities that are most likely to own essential claims are also most likely to be part of the Working Group in question. However, with the proliferation of ICT patents, standards and NPEs, the incidence of such situations can be expected to increase.

As long as an SSO is successful in acquiring a commitment, by one means or another, from the owners of all patents with essential claims, and refrains from adopting standards for which any sought commitment is not available, then it has reduced the risks for implementers as much as reasonably possible. However, this statement assumes that all signed Commitments are explicit in terms of the obligations of the signing party. In our view, this is best done through the use of a uniform declaration form, which recites the specific licensing commitments contained in the IPR policy, and is designed to function as an independent legal document.

The use of specific declaration forms also provides assistance in addressing another common problem: how to ensure that obligations undertaken with respect to essential claims “travel” with that claim if the underlying patent is later transferred to another owner. Where a policy (and ideally the declaration form as well) states that the obligations assumed are binding upon a new owner, that commitment is more likely to be disclosed to, or discovered by, the new owner in the exercise of the legal “due diligence” commonly undertaken in connection with a transfer or sale of assets. Such an approach will also make it more likely that obligations will be preserved when subsequent transfers take place. Stating obligations in both an IPR policy and in Commitment forms does introduce a degree of risk of confusion and possible erosion of legal enforceability if the terms are not identical (and we have observed such inconsistencies in the policies we examined). However, these risks can obviously be addressed through care in the maintenance of IPR policy documentation.

Most “modern” IPR policies that do not impose automatic licensing obligations do in fact require the use of Commitment forms, but this practice is still not universal. Moreover, of those policies that do use forms, not all restrict responders to simply “checking the box” of the licensing option that they elect, allowing them instead to make their own statement, which can vary (and therefore arguably supersede) the licensing requirements of the policy itself.

4 Defining essential IPRs

This section examines the exact definition of essential IPR in the twelve standards bodies we considered.

One of the central concepts of any SSO IPR policy is that of the “essential” or “necessary” patent claim. At a conceptual level, an essential claim is an intellectual property ownership right that allows the owner to control the use of an invention required to practice a given industry standard, making it impossible to implement the standard without infringing the essential claim. In other words: there are no alternative ways to implement a particular element of a standard without infringing the protected technology.⁴⁷ It is generally understood that there will often be non-essential patent claims that implementers might also wish to license from their owners, which those owners may (or may not) be willing to license, on whatever terms they choose, and IPR policies are not intended to address this reality, or to impose any obligations on the owners of such non-essential claims. This reality is also important from an antitrust perspective, because one hoped for result of the widespread adoption of a standard is unleashing a wave of innovation in the marketplace, as vendors compete on product designs and related services at a layer above the standardized technology.

While the general concept of an essential IPR is clear, the devil is in the details, some of which can be quite important. Definitions of essential IPR vary with respect to what types of IPRs are covered (patents, copyrights, or other rights), whether ‘commercially essential’ IPR is also included in definition, and with respect to what parts of a standard the definition relates.

It is important to note that it is not always possible to tell from either the text or the context what the creators of an IPR policy might have intended with respect to a given term. For example, one policy may make an explicit statement, such as that ‘enabling technologies’ are expressly excluded from coverage by the policy (see Section 4.1.7 below), while another may not. In the case of enabling technologies, it is likely that in the latter case, the creators of the policy thought that it was unnecessary to make this statement, treating it as a given. Or it may be that the policy was developed before the inclusion of this type of term became common. Or it may instead reflect no more than convention: while this type of provision is quite common in SSOs formed in some sectors, such as semiconductor design and production, it is not as common in other sectors that are less concerned with the issue, or where the risk of confusion on the question is more remote. In some cases below, we will on occasion speculate on what conclusions may be drawn from the inclusion or absence of certain terms (and will make it clear when we do so).

⁴⁷ As noted in the table that follows, many IPR policies add additional words to its definition of an essential claim, stating (for example) that there are no technically and/or commercially reasonable alternative approaches.

4.1 The definition of essential intellectual property rights

Looking at the definitions of essential IPR to be found in our sample set, we can distinguish many different aspects. We provide a general overview of these aspects in *Table 3*, and then discuss each aspect in turn in the subsections below.

Table 4: Overview of the definition of essentiality at the twelve studied SSOs

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Includes copyrights essential to implementation (§ 4.1.1) (C14, G2)	ITU Only (1)	No	Yes	Yes	Yes (18)	No (2)	No	No	Yes	Yes
Specific policy for non-essential copyrights for implementation (§ 4.1.1) (C14, G2)	ITU Only (1)	No	Yes	(14)	(18)	No	No	(10)	No	No
Includes other IPR than patents or copyrights (§ 4.1.2) (C14)	No (12)	No	Yes (specified)	No (16)	Yes (specified)	No	No	No	Yes (any by law)	No
Includes commercial essentiality (§ 4.1.3) (C9)	[No]	Yes	No (15)	[No]	[No]	[No]	Yes	[No]	[No]	[No]
Includes optional normative portions (§ 4.1.4) (C11)	{No} (11)	Yes	Yes	Not defined	Not defined (4)	Yes	Not defined	Yes	Yes	Yes
IPR on other, externally developed standards that are normatively referenced (§ 4.1.5) (G3)	Not defined	Not defined	Not defined	Not defined	Not defined	Not defined	Not defined	Excluded	Not defined (5)	Included (9)
Specifically excludes enabling technologies (§ 4.1.6) (C9)	No	Yes	No	No	No	No	No	Yes	Yes	Yes
Defines timing of essentiality test (§ 0) (C9)	No	Yes	Yes	No	No	Yes	No	Yes	No	No
Excludes non-essential claims in same patent (§ 4.1.8) (C9)	Yes	Yes	[No/yes] (15)	[Yes]	[Yes]	Yes	[Yes]	Yes	Yes	Yes
Includes pending applications (§ 4.1.9) (C14, C9)	Yes	Yes	Yes	Left to accredited SSO (7)	Yes (also unpublished)	Yes (also unpublished)	Yes	Yes, also unpublished (8)	Yes	Yes
Excludes expired patents, withdrawn applications, and patents held invalid by court (§ 4.1.10) (C9)	Not Specified	Not Specified	Not Specified	Not Specified	Yes	Not Specified	Not Specified	Not Specified	Not Specified	Not Specified
Essentiality determined with reference to final standard (§ 4.1.11) (D10)	{Yes} (17)	[Yes]	Yes	Not defined	[Yes]	Yes	Yes	Yes	n/a	Yes (10)
IPR is also essential if all alternatives are patented (§ 4.1.12) (C9)	[No]	Not defined (6)	Yes	Not defined	[No]	No	[No]	Not defined (6)	Not defined (6)	Not defined (6)

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. Accolade brackets { } indicate that is not defined in the policy but it was clarified as such by a representative of the SDO. For the numbered notes, see Annex 1. References in **bold, italic** text refer to the corresponding section in the underlying analysis documents.

4.1.1 *Includes copyrights essential to implementation (and policies for non-essential copyrights for implementation)*

Although patents are the most common type of IPR that can be relevant for implementing a standard, other types of IPR can also be relevant. Most notably these are copyrights. It is important to note that in this context we are *not* referring to the copyright in the text of the

standard as such; while an SSO does indeed need to include copyrighted works in its standards, and to own those standards as ‘derivative works’, these copyrights are only relevant to the copying and distribution of the standards, and not to the implementation of the standards in products.

The issue of copyrights in standards in the latter sense is complex, in part because those that create a given IPR policy may be unaware that standards that may be created under the resulting policy in the future may in fact call for the inclusion of text (e.g., software code) from the standard itself. As a generality, the issue of what might be referred to as ‘essential copyrights’ is rarely dealt in an effective way in IPR policies. Moreover, when copyrights are arguably included in a definition relating to essentiality (e.g., ‘essential IPR’), it is often unclear whether the inclusion was deliberate, or merely an accidental result of imprecise drafting (e.g., using the term IPR interchangeably with patents). The question remains, however, whether, when and how copyrightable material should appropriately be classified as ‘essential’ in an IPR policy.

‘Essential Copyrights’: In order for a copyrighted work to be ‘essential’, it would necessarily need to be literally copied in the process of implementing a standard. And in some cases, such copying may in fact be required, as when an essential part of a standard is a piece of software code for audio or video codecs, or copyrighted text on streams of data and stream definitions (such as XML). In these cases, inclusion of the text or code may be required. The inclusion of the text would also need to be required, as compared to text or code that is only included as a convenience for implementers. For current purposes, we will refer to only such code or text as material subject to an ‘essential copyright’, and also note that the inclusion of such essential material is likely to be less common than the inclusion of available, but non-mandatory, text. Note that several SSOs, such as ANSI, have recommended against including such copyrighted works in standards.⁴⁸

‘Non-essential copyrights for implementation’: In this case, the use of copyrighted material (e.g. code) in the text of the standard is not strictly necessary (‘normative’) to make a compliant product. However, those that created the standard may have decided to include available code, and this inclusion may add significant value to the standard. Such inclusions may be made for informational purposes, or to save time for implementers. Furthermore, SSOs (usually consortia) increasingly provide deliverables besides standards, in order to facilitate the achievement of the overall goals of the SSO. These deliverables can include reference code (i.e., an actual implementation of a standard that is agreed to be ‘inside the box’ of member essential claim commitments), or compliance test suites.

While such deliverables have often been created under the terms of an ordinary IPR policy, a better and more appropriate practice is for an SSO to either develop such code under a separate agreement, or to tailor its IPR policy to explicitly cover such development work. Similarly, such

⁴⁸ See the ANSI Guidelines on Software in Standards, at I.

code should usually be made available to the public under a license that is in some respects different from the license that the SSO might use in connection with the distribution of its standards. While useful, these copyrighted works would not be considered to be essential in the same sense as any underlying essential claims, because in principle, other implementations could be developed to serve a similar purpose that would not infringe the SSOs copyright. We therefore refer to the copyrights in such work product as ‘non-essential copyrights for implementation’.

With the qualifications noted above, both essential copyrights and non-essential copyrights for implementation’ may become more and more important, given the increasing extent to which software is implementing functionalities and even used to define functionalities, and the degree to which consortia are finding it useful to include code in their deliverables.

Excerpt of Table 4

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Includes copyrights essential to implementation (C14, G2)	ITU Only	No	Yes	Yes	Yes (18)	No (2)	No	No	Yes	Yes
Specific policy for non-essential copyrights for implementation (C14, G2)	ITU Only (1)	No	Yes	(14)	(18)	No	No	(19)	No	No

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in **bold, italic** text refer to the corresponding section in the underlying analysis documents.

We observed three variations of treatment with respect to ‘essential copyrights’ in the sample set (see table):

1. The SSO does not address copyrights in implementations at all (usually it has a ‘patent policy’ instead of an ‘IPR policy’). Should any copyrighted item ever become essential IPR, then the policy would not cover such IPR. An example is IEEE.
2. The SSO includes essential copyrights in its definition of essential IPR, and deals with them in the same way as patents. IETF⁴⁹ and ETSI provide examples. Note that such SSOs may *also* have separate rules relating to non-essential copyrights, as does ETSI (see below). One of the challenges with this approach is that patents and copyrights are sufficiently different that using the same language to address both types of intellectual property provides a less than ideal result.⁵⁰
3. The SSO includes separate language to address essential claims and essential copyrights. An example is ANSI. In the ANSI policy, creating a standard that includes ‘essential copyrights’ is strongly discouraged, and may only be undertaken in exceptional situations. If essential copyrights are nevertheless included, the ANSI guidelines describe what should be done

⁴⁹ See also Note 18 of Table 4. We do not know whether these specific rulings (also) affect essential copyrights.

⁵⁰ An IETF representative confirmed that copyrights were covered by its regular IPR policy, but also clarified: “*Most of the provisions, however, are clearly written with only patents in mind (‘granted’, ‘applications’, ‘unpublished’) so the application to the copyright domain might create some issues.*”

(which is a different approach than specified for patents). Another example is ITU-T (but not ISO and IEC), which has a separate policy that covers essential copyrights (and also non-essential copyrights; see below).

In addition to including copyrights in its disclosure requirements, IETF provides that any source code included in a standard must be made available under the BSD open source license. This requirement applies both to essential and non-essential copyrights in software code, as no differentiation between the two is made.

As noted, several SSOs in the study set have separate policies for “non-essential copyrights”:

- ITU-T has a policy document that covers both essential and non-essential copyrights. The first version of this policy appeared around 2002/2003, and was updated in 2011.
- ETSI recently (2011) introduced a specific policy for non-essential copyrights, which can be found in Clause 9 of the ETSI’s Rules of Procedure. In ETSI’s IPR Guide, it is stressed that the inclusion of such software can result in quite complex situations and issues (not only with respect to licenses but also regarding maintenance, etc.). In effect, the IPR Guide discourages such inclusion where it can be avoided. However, if software is included, the rules require that the contributor of the software code must: (a) must provide a royalty-free license for the purpose of testing and evaluating the software by members and other implementers of the standard, and (b) submit a commitment to license the software on FRAND terms to implementers of the standard (e.g., in commercial products). If the contributor does not provide such a commitment, it will be bound to provide royalty free licenses.

4.1.2 Includes other IPR than patents or copyrights

Three of the ten SSOs we examined also address types of IPR other than patents and copyrights. ETSI, IETF and HDMI Forum all specifically include utility models, which may be protectable in some, but not all, legal jurisdictions, and are in many ways quite similar to patents. IETF also includes ‘invention registrations’, and the HDMI Forum mentions, “rights deriving from inventor’s certificates”. Furthermore, IETF specifically includes database and ‘data rights’.⁵¹ Nevertheless, it appears that IPR other than patents have seldom, if ever, been disclosed pursuant to the IETF policy. The NFC Forum specifically covers trademarks to the extent of clarifying that contributions of trademarks are not required under the policy.

ITU-T (but not ISO or IEC) has adopted a separate policy addressing the inclusion of marks (i.e. trademarks, service marks and certification marks) in ITU-T Recommendations. But these marks are not part of the IETF definition of essential IPR.

⁵¹ IETF also deals with trademarks, but in a slightly different manner. See RFC 5378, Sec. 3.4

Excerpt of Table 4

	ITU/ISO/I EC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Includes other IPR than patents or copyrights (C14)	No (12)	No	Yes (specified)	No (16)	Yes (specified)	No	No	No	Yes (any by law)	No

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in **bold**, *italic* refer to the corresponding section in the underlying analysis documents.

Interestingly, the HDMI Forum explicitly includes ‘trade secrets’, ‘know-how’ and ‘technical information’. ETSI, on the other hand, explicitly excludes trade secrets, as does NFC Forum, and IETF specifies that nothing submitted to it can be a trade secret, stating in effect that if information is confidential, it should not be disclosed.⁵² Trade secrets are distinct from other types of IPR in that they must be kept confidential in order to be entitled to legal protection; accordingly, disclosure to third parties must only be pursuant to non-disclosure or confidentiality contracts between the owner of the trade secret and those to whom the secret is disclosed (generally speaking, a competitor may discover a trade secret by reverse engineering and apply it commercially without violating the rights of the owner of the trade secret). The concept and treatment of trade secrets, however, varies among jurisdictions.

Because a trade secret is only legally protectable to the extent that it remains secret, an SSO that seeks to include trade secrets in its licensing obligations would by definition need to conduct its technical process under contractual confidentiality obligations. In such an event, the resulting standard, to the extent that it disclosed the trade secret, would also need to be distributed under similar protections. Many SSOs, however, take the opposite approach, stating that no member is expected to reveal trade secrets, and disclaiming any obligation to maintain such information as confidential if a member nevertheless chooses to disclose its trade secrets.⁵³

For those SSOs whose policies cover IPRs other than patents or copyright, these types were explicitly specified, except in the case of the HDMI Forum, which covers any other IPRs conferred by statute or law.

4.1.3 Includes commercial essentiality

In the strictest sense, policies consider IPR essential if there is simply no other, non-infringing alternative way to implement a standard. However, some IPR policies recognize the fact that other routes to compliance may be so difficult, unsatisfactory or expensive to implement in practice that they do not represent commercially realistic alternatives. For example, one could imagine a case of a patented technology for a mobile phone function where only two technical approaches were possible, one of which would make the phone twice as expensive to build (irrespective of

⁵² See RFC 5378, Sec. 5.2.

⁵³ Many SSOs do, however, conduct their technical processes under less formal conditions of confidentiality. This provides higher value to members, and also prevents non-members from filing patent applications based on the evolving draft standard.

licensing fees), or which might reduce its battery life by more than half. In such a situation, it can be reasonable to speak of technology that is protected by ‘commercially essential’ claims – claims relating to inventions for which there are no commercially feasible non-infringing alternative approaches.⁵⁴ Some SSOs therefore include the concept of commercial essentiality in their definition of essential claims, while others do not.

The concept of commercial essentiality provides a timely example of the value of being precise in IPR policies, because, absent such a definition, litigants are free to argue what the term should mean in court, and judges and juries are put to the task of deciding which side of the argument to support. And this has indeed been the case of late. While it could be argued that such questions are better left to the courts in at least some cases, the fact remains that SSO members have the opportunity to tell a court what they mean when they impose obligations on themselves.⁵⁵

Excerpt of Table 4

	ITU/ISO/I EC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Includes commercial essentiality (C9)	[No]	Yes	No (15)	[No]	[No]	[No]	Yes	[No]	[No]	[No]

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in **bold, italic** refer to the corresponding section in the underlying analysis documents.

Eight of the ten examined policies are limited to technical essentiality. Of these, ETSI is the only one that explicitly rules out commercial essentiality, while for the other seven policies this can be understood by their definition of essential IPR as the lack of existence of alternatives, or technically feasible, alternatives. One possible reason for making this choice is that the existence of commercial essentiality is by nature a subjective determination (that said, the existence of technical essentiality is similarly subjective as well). The policies of IEEE and VITA do take up the challenge, and explicitly address commercially essential claims.

4.1.4 Includes optional normative portions

In all the policies we studied, the definition of essential IPR is limited to the normative clauses in standards. Informative elements are protected by the SSO’s copyright, but are not relevant from an implementation or patent perspective. However, in the normative clauses, there may be both mandatory portions (those elements that must be implemented in order for the resulting product to

⁵⁴ A related question, not addressed in this study, involves what have sometimes been referred to as ‘commercially essential’ patents. Recent cases in which this concept has been proposed have involved features considered to be very valuable in the marketplace, such as user interface elements for mobile devices and smartphones.

⁵⁵ In the view of an economist, a ‘technically essential’ patent covers a technology that has no substitutes, while a ‘commercially essential’ patent has very poor substitutes, and consequently a very low elasticity of demand (i.e. raising the price of a license to commercially essentially technology produces little or no switching to feasible alternatives), but to an implementer, a very poor performance alternative can be as undesirable as a very expensive alternative. Absent guidance in an IPR policy, whose view should a court be swayed by?

be considered to be compliant) and optional portions. In fact, it is quite common for a standard to include numerous optional portions, some of which may never be implemented by manufacturers at all, while others may eventually become implemented in nearly every product. IPR policies may apply the same licensing obligations to claims that may be infringed by implementation of the optional portions of a standard, or may restrict obligations to the mandatory sections only. In the latter case, an implementer is effectively unprotected, even from the members of the SSO in question.

Excerpt of Table 4

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Includes optional normative portions (C11)	{No} (11)	Yes	Yes	Not defined	Not defined (4)	Yes	Not defined	Yes	Yes	Yes

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. Accolade brackets { } indicate that is not defined in the policy but it was clarified as such by a representative of the SDO. For the numbered notes, see Annex 1. Indications in bold, italic refer to the corresponding section in the underlying analysis documents.

Seven of the ten policies state that patent claims under optional parts (or alternatives) are to be considered to be patents with essential claims. ITU/ISO/IEC, ANSI, IETF and VITA do not mention distinctions between mandatory, optional and alternative elements. However, an ITU representative stated that “*Only mandatory portions of the standard can be considered as ‘essential’*”. This makes the ITU (and perhaps also the ISO and IEC) the only policy where the essentiality definition does not include optional normative portions. This may put implementers in a difficult position: if they decide to implement a specific option (for instance because the markets expect an implementation to include the feature in question) they may not be assured that they can obtain the necessary licenses to do so.

4.1.5 Includes IPR on normatively referenced other standards

Increasingly, standards make use of existing standards (or parts thereof) as building blocks. For instance, many modern telecommunications standards use internet technologies (e.g. the TCP/IP protocol), as well as existing voice-over-IP technologies to provide telephony services. As another example, many standards use existing picture, audio and video coding protocols. In such cases, the new standard ‘normatively’ refers to such existing standards; that is, it states that a compliant implementation of the standard in question must also implement the referenced standards as well. This raises the question whether any essential IPRs under the referenced standards should also be considered to be essential in the context of the new standard’s IPR policy?⁵⁶

⁵⁶ Additionally, it also depends on whether the standard was referenced in its entirety or only partially. If referenced in its entirety, then an implementer can argue, “I am implementing the referenced standard and I can rely on the commitments made to that other standards body”. If referenced only in part, this becomes less clear.

Excerpt of Table 4

	ITU/ISO/I EC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
IPR of normatively reference externally developed standards (G3)	Not defined	Not defined	Not defined	Not defined	Not defined	Not defined	Not defined	Excluded	Not defined (5)	Included (9)

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in **bold, italic** refer to the corresponding section in the underlying analysis documents.

Although such situations are occurring more frequently, eight of the ten examined IPR policies make no mention of whether normatively referenced standards are to be covered by IPR policy obligations. Two specific policies make opposite choices:

- W3C explicitly excludes IPR essential to normatively referenced standards;
- NFC Forum explicitly includes IPR essential to normatively referenced standards, but specifies that this excludes indirect normative references (i.e. normative references contained in normatively referenced standards).⁵⁷

For normatively referenced, but excluded, standards, a cautious implementer must therefore take on additional burdens. In order to have the same degree of information relating to the availability of essential IPR on these external standards, the implementer would need to review not only the IPR policies of each other SSO involved, but also the Commitments and membership lists of each SSO to find out which patent portfolios were subjected to an obligation. The implementer must also accept that these IPR policies are likely to apply different rules to a greater or lesser extent.⁵⁸

4.1.6 Specifically excludes enabling technologies

A somewhat similar question arises with respect to enabling technologies. The implementation of modern ICT standards invariably requires the use of a wide variety of both fundamental and more specific technology to enable operation. For instance, it would be impossible to produce a mobile phone without certain (patented) techniques for the production of chips, or more general microprocessor and ASIC technologies. While such technologies can have great commercial value, they are often only remotely aligned with the specific functionalities defined by a standard. Moreover, many of the owners of these technologies are likely to be both members of SSOs, as well as (understandably) unwilling to provide licenses on a casual basis to what may be their most valuable technology assets. IPR policies therefore frequently state that patent claims relating to

⁵⁷ The exact text of the NFC Forum IPR Policy at §2 is: *‘[Necessary Claims are] Those claims under patents and/or patent applications anywhere in the world that would be Necessarily Infringed by [...] direct normative references to other existing standards and/or specifications contained in a body of a Specification. [...] Necessary Claims shall not include [...] normative references to other existing standards and/or specifications in the direct normative references referred to in the body of the Specifications.’*

⁵⁸ For this reason, some IPR policies outside the sample set of this study may specify that only standards developed under policies that have at least as restrictive rules as the primary policy are to be normatively referenced. Such a provision is most likely to appear in a more demanding IPR policy, such as one that requires that all patents with essential claims be licensed without cost.

such ‘enabling technologies’ are not to be considered essential claims subject to the disclosure and licensing obligations under the IPR policy.

Excerpt of Table 4

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Specifically excludes enabling technologies (C9)	No	Yes	No	No	No	No	No	Yes	Yes	Yes

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in **bold**, *italic* refer to the corresponding section in the underlying analysis documents.

As usual, a variety of formulations of the enabling technology exclusion were found, of which the following are examples:

- The HDMI forum employs a definition with that lists specific, excluded technologies: *“claims relating to semi-conductor materials, semi-conductor manufacturing apparatus, semi-conductor manufacturing methods, semi-conductor circuit designs”*.
- The NFC Forum has a wider, suggestive rather than exclusive definition of enabling technologies: *“technologies that may be necessary to make or use any product but are not themselves expressly set forth in [the Specification] (e.g., semiconductor manufacturing technology, compiler technology, object oriented technology, basic operating system technology, and the like)”*.

4.1.7 Defines timing of essentiality test

Technology development in the ICT domains is unusually dynamic, and therefore what may be ‘essential’ one day may have one or more alternatives the next. Designating the date at which essentiality is determined can therefore be a point of significance.

Excerpt of Table 4

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Defines timing of essentiality test (C9)	No	Yes	Yes	No	No	Yes	No	Yes	No	No

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in **bold**, *italic* refer to the corresponding section in the underlying analysis documents.

Four out of the ten policies explicitly define such a point in time for the essentiality test:

- IEEE: ‘at the time of approval of standard’.
- ETSI ‘taking into account normal technical practice and the state of the art generally available at the time of standardization’;
- OASIS: ‘at the time the Standards Final Deliverable is approved’; and
- W3C: ‘At the time the specification becomes a recommendation’.

The remaining six bodies do not mention this, leaving open the question of whether those who drafted the policies in question assumed that the answer was obvious, intended a different interpretation, or simply did not think to address the issue at all.⁵⁹

4.1.8 Excludes non-essential claims in the same patent

A single patent typically has a number (and often quite a large number) of claims, which together define the scope of protection granted by the patent. While some claims describe technologies that are essential to a standard, others typically will not. In fact, in essential claim infringement cases, the litigants will often argue whether a given claim is, or is not, essential (and therefore subject to a RAND or other licensing obligation) or not essential (but still infringed by a specific product that implements the standard).

Excerpt of Table 4

	ITU/ISO/I EC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Excludes non-essential claims in same patent (C9)	Yes	Yes	[No/yes] (15)	[Yes]	[Yes]	Yes	[Yes]	Yes	Yes	Yes

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in **bold, italic** refer to the corresponding section in the underlying analysis documents.

Nine of the ten policies have IPR policies that refer to essential claims, as compared to ‘essential patents’. Three of these state specifically that non-essential claims in the same patent are excluded from the definition. In many other policies, the definition is crafted in such a way as to specifically apply only to those claims that are, in fact, essential.

The ETSI policy is the exception. Under it, Commitments are impacted as follows: *‘To the extent that the IPR(s) disclosed [...] are or become, and remain essential’*. This language could be read in different ways: (1) whether the patent as a whole is essential or not essential, (2) whether separate claims in the patent are essential or not (meaning that there may be no licensing obligation for the non-essential claims, which may in some situations be valuable claims after all). We leave it to the reader to decide how to interpret this clause.

4.1.9 Includes pending applications

There may be a considerable time lapse between the moment a company applies for a patent, and the moment the patent is granted (if at all). Almost all standards bodies explicitly include patent applications in their disclosure requirements – except ANSI, which mentions that its accredited standards bodies may, but are not required, to request disclosure of patent applications.

⁵⁹ Note that this factor is different from the timing of when essential IPR must be disclosed and/or a licensing declaration made. Usually, but not always, this process step occurs relatively late in the process (e.g., when the final draft is posted for working group comments), and therefore fairly close to final.

Excerpt of Table 4

	ITU/ISO/I EC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Includes pending applications (C14, C9)	Yes	Yes	Yes	Left to accredit- ed SSO (7)	Yes (also unpubl- ished)	Yes (also unpubl- ished)	Yes	Yes, also unpubl- ished (8)	Yes	Yes

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in **bold, italic** refer to the corresponding section in the underlying analysis documents.

IETF, OASIS and W3C clarify that the obligation extends to unpublished as well as published patent applications in their policies (in order to protect trade secrets in case a patent is not granted, the United States regulations allow patent applications to be kept confidential, provided that complementary, public applications have not been filed abroad; and in most other jurisdictions, patent applications are usually not published before 18 months after filing). For the other policies, this clarification is not included. Some policies not included in the study set address the issue of confidential applications in a different way, stating that disclosure with respect to essential claims under such application is required only, “to the extent possible without disclosing trade secrets”.

4.1.10 Expired patents, withdrawn applications, and patents held invalid by court are excluded

Only the IETF IPR policy explicitly excludes expired patents, withdrawn applications, and patents held invalid by court. As it would appear obvious that there would be no need to disclose or agree to license a legal right that no longer exists, this language can be viewed as both unnecessary as well as not meaningful from a legal perspective.

Excerpt of Table 4

	ITU/ISO/I EC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Expired patents, withdrawn applications, and patents held invalid by court are excluded (C9)	Not Specified	Not Specified	Not Specified	Not Specified	Yes	Not Specified	Not Specified	Not Specified	Not Specified	Not Specified

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in **bold, italic** refer to the corresponding section in the underlying analysis documents.

4.1.11 Essentiality determined with reference to final standard

Work on standards is necessarily work in progress.⁶⁰ During the development phase, many different technologies may be proposed and considered. The finally adopted standard, however, will often only include a subset of all these proposed and considered technologies. Similarly, patent applications often have a wider scope than the resulting issued patents (e.g., the patent examiner may allow some, but not all claims included in the application, and may require modifications to some of the claims that are allowed; See Section 5.4.4). A claim asserted to be essential at the time of disclosure may therefore not be a patent claim at all at a later date.

⁶⁰ In fact, there are often changes even after the standard is released for implementation.

Excerpt of Table 4

	ITU/ISO/I EC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Essentiality determined with reference to final standard (D10)	{Yes} (17)	[Yes]	Yes	Not defined	[Yes]	Yes	Yes	Yes	n/a	Yes (10)

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in **bold, italic** refer to the corresponding section in the underlying analysis documents.

Whether or not IPRs that are not essential for the final standard are still within the definition of essential claims can have consequences for the licensing commitments that parties make. Six policies explicitly or implicitly determine that patent claims are considered essential only if they are essential for the final standard. If not, the licensing commitment does not mature.

While in theory this concept seems straightforward, the language instantiating it in a given instance may be less so. The ITU/ISO/IEC policy provides an example of this unfortunate reality (the following explanation was provided to us by someone involved in the revision of this policy). While the licensing commitment uses the word ‘Patent’, it is written in capitals and thereby refers to the definition of ‘Patent’ in the Guidelines. That definition is similar to what we would expect for an *essential* patent: “*The word “Patent” means those claims contained in and identified by patents, utility models and other similar statutory rights based on inventions (including applications for any of these) solely to the extent that any such claims are essential to the implementation of a Recommendation | Deliverable. [...]*”. Thus, a patent that does not include essential claims is not a ‘Patent’, and, as a consequence, the commitment is only made to the extent the patent is in fact essential.⁶¹

Finally, for ANSI this aspect remains unspecified.

4.1.12 An IPR is also essential if all alternatives are patented

It may be the case that a certain requirement in the standard can be satisfied by more than one technical approach, each of which has been separately patented. Such situations may not occur very often (ETSI refers to them in their policy as ‘exceptional cases’), but they are nevertheless possible.⁶² ETSI explicitly discusses this situation in its policy, and states that the patents for either solution are covered by the definition of essential patents. Because of this explicit definition, some have referred to this situation as ‘*the second limb of the ETSI definition of essentiality*’.⁶³ The HDMI Forum applies the same rule in a different way.

⁶¹ It can be assumed that the clarity of any legal text is inversely proportional to the number of lawyers involved in its creation.

⁶² From the perspective of an economist, the key question would be whether all relevant patents are owned by a single firm. If so, the situation closely resembles the ‘typical’ case where there is a single essential IPR for a particular functionality. If not, the patents are not essential in the economic sense, even if they are covered by the IPR policy, since implementers can choose between independently owned approaches, and competition could therefore ensue.

⁶³ Paul Massey (2008). Playing the mobile licensing game: Nokia v Interdigital and Qualcomm v Nokia. CIPA Journal, March 2008, Vol. 37, No. 3, pp. 149-153.

Excerpt of Table 4

	ITU/ISO/I EC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
An IPR is also essential if all alternatives are patented (C9)	[No]	Not defined (6)	Yes	Not defined	[No]	No	[No]	Not defined] (6)	Not defined (6)	Not defined (6)

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in **bold, italic** refer to the corresponding section in the underlying analysis documents.

The other policies do not explicitly address this issue. Some of them (e.g. IETF and W3C) define essentiality using the phrase, “being no non-infringing alternatives”, and while there is some ambiguity on how this should be interpreted, one could argue that where the plural of the word ‘alternative’ is used, it is intended that the reference to ‘essential claims’ applies to the aggregate pool of claims, rather than the claims applying to a single technology. But it cannot be determined conclusively whether this was the intention of those who drafted the policy in question, in which case the opposite conclusion might be correct.⁶⁴

4.2 Reflection on the definition of essential IPR

While there is general agreement that ‘essentiality’ is at the core of an IPR policy – in most policies, both disclosure obligations and licensing commitments depend on this – there is a surprisingly wide variation (as well as imprecision) regarding how this extremely important element should be defined. In a number of cases, we observed vagueness and/or a failure to address important concepts. Inevitably, these lapses may cause confusion on the part of those operating under the terms of the policies in question, and may lead to costly and time consuming litigation in the breach.

⁶⁴ Because the concern in question would not arise frequently, the most likely conclusion may be that this nuance was simply not considered when the eight silent policies were developed.

5 Disclosure of essential IPR

Most IPR policies have two core elements: (1) rules for disclosure of patents that may have essential claims and (2) rules for providing licensing commitments (or statements of non-commitment). This section investigates the disclosure element of IPR policies, while Section 6 will examine licensing commitments.

While conceptually distinct, disclosure and licensing commitments are often intertwined in practice. For example, patent claims are often disclosed in the same declaration form that includes licensing commitments. One of the difficulties of conducting this comparative study is that under the policies of some SSOs, the making of a licensing statement may indicate that the respondent believes that it owns patents with essential claims (which it must disclose), while in other SSOs participants reserve the right to seek a paid license but are not required to disclose any patent claims that they believe to be essential. A common reason for taking the latter approach is that determining whether or not a member owns any patents with essential claims can be quite burdensome, and especially so if the member owns a very large patent portfolio. By selecting the option that reserves the right to charge a fee, the member can keep its options open while not having to go to the trouble of reviewing its patent portfolio. In this section we will seek to disentangle both elements as much as possible.

We begin by reviewing the more general aspects of disclosure procedures (Section 0). In an ideal world every SSO member would perform a formal patent search of its IPR assets (or searches, for multiple standards).⁶⁵ In reality, the marketplace has decided, as evidenced by virtually all IPR policies, that requiring a patent search (and especially members that have very large patent portfolios and are members of hundreds of SSOs), . We therefore continue by discussing disclosure obligations in relation to organizational and individual knowledge (Section 5.2). Next we address the timing of disclosure (Section 5.3). Finally, we discuss the information SSOs require to be provided in disclosures (Section 5.4), and conclude with a reflection on our findings (Section 5.6).

Before proceeding, it is important to differentiate between two distinct forms of disclosure that are each required under many IPR policies. The first is often referred to as a patent call, or call for patents, and occurs at the beginning of every face-to-face and telephonic meeting. Usually, a short statement is read, such as the following:

Please be aware that this meeting is being held under the Intellectual Property Rights Policy adopted by Consortium. If you do not have a copy of this

⁶⁵ In the ideal world, it would also be relatively easy to locate relevant patents and assess their validity and essentiality, so it would not matter who did the searching. But we clearly do not live in such an ideal world, and patent searches are costly subjective (and therefore prone to uncertainty).

policy, please see me during this meeting. You may also view and download a copy of that policy at the _____ section of Consortium website.

At this time, I would ask that anyone in attendance inform me if they are personally aware of any claims under any patent applications or issued patents that would be likely to be infringed by an implementation of the specification or other work product which is the subject of this meeting. You need not be the inventor of such patent or patent application in order to inform us of its existence, nor will you be held responsible for expressing a belief that turns out to be inaccurate.

Patent calls are meant to be informational, rather than formal and binding. Many SSOs describe how chairperson are to record responses to such calls for patents that are received during meetings, and typically share them with the internal or external legal advisors of the SSO. SSO members will often instruct their representatives (mainly engineers) not to reply spontaneously at a meeting, and to confer with their legal departments before making any statement to the SSO. This allows the legal department to not only confirm that disclosure is required, but also that the patent claims in question are in fact likely to be essential.

The second type of disclosure typically occurs later in the process, is intended to be formal, and is usually linked to a requirement that the member state its intentions at the same time regarding whether it will or will not license its patents with essential claims on RAND terms.

It is important to note that the two types of disclosures noted are not intended to be alternatives. For example, while not all IPR policies require patent calls, those that do typically also require formal disclosures later in the process, and each requirement is intended to serve a different purpose. The first is intended to provide a sort of early warning system, in case someone in the meeting has personal knowledge of a potentially essential claim owned by the member represented by the individual making disclosure, or a third party. The disclosure may or may not turn out to be accurate, and there is no penalty for being in error. If a patent claim does in fact appear to be essential, the working group may be able to design around potential infringement at an early stage in the development process.

Making patent calls also makes it harder for a member acting in bad faith to later claim that it was unaware of any duty to disclose an essential claim in a timely fashion, if its representative had actual knowledge of the existence of a potentially essential claim.

The more formal disclosure obligation is typically intended to result in a legally binding commitment with respect to essential claims. However, since it may be made late in the standards development process, avoiding infringement of an essential claim which is eventually not made available for licensing can result in a significant loss of time before a non-infringing standard can be adopted.

5.1 General disclosure procedure

This section discusses the more general rules of essential patent claim disclosure, which may address not only essential claims owned (and under many IPR policies, also those that may be controlled) by a member, but also known patents with essential claims owned by other parties. It is also significant to note that while ANSI currently does not require its accredited SSOs to have a disclosure requirement in their policy, such a requirement is currently being discussed.

5.1.1 Nature of disclosure rules concerning self-owned patents

Disclosure obligations differ substantially among standards bodies. For many organizations, disclosure rules for self-owned (and often also for controlled) patent claims⁶⁶ depend on the status or role of the party in question, or the licensing option elected by the party making disclosure (see *Table 5*).

The broad differences in status that IPR policies recognize are as follows:

- **Submitter:** A participant in a working group that makes a conscious decision to submit technology to the SSO with the desire that it be included in a standard. Some policies require that submission be made on a royalty-free basis, while others permit the submitter to retain the right to charge a fee. Submitters are sometimes not permitted to refuse to license any patents with essential claims under their submissions.
- **Working group participants:** Policies typically provide either two or three options to working group participants: Royalty-free RAND, RAND with the right to charge a fee, and a refusal to license (on RAND terms or otherwise) at all.⁶⁷
- **Non-working group participating member:** If an SSO has many working groups, it is less likely that it will make members of this type respond to a disclosure and licensing requirement. Where an SSO does impose a requirement on all of its members regardless of participation, it may differentiate the requirement (i.e., participants are allowed only the first two options, while non-participants are also permitted the third option – to refuse to license an patent with essential claims).

In a carefully drafted policy and disclosure form, a respondent has the right to select one option as to some patent claims, and another option with respect to other patent claims.

⁶⁶ Here, self-owned refers to patents owned by a member or party (including its subsidiaries as discussed in Section 3.3), or controlled by the member or party).

⁶⁷ The distinction between a refusal to license on RAND terms, or not to license at all, is immaterial, because in almost all SSOs, RAND licensing is the minimum commitment necessary to permit essential claims to be knowingly included in a standard.

In this table, we focus on disclosure obligations as such, rather than on the process for making disclosures. Note that all these obligations may be subject to what a party *knows*; a topic we investigate in Section 5.2.2. In the table, we omit the HDMI Forum and the NFC Forum. The first has no general disclosure mechanism, and the latter has a disclosure policy with unusual features described below.

Table 5: Nature of disclosure rules for self-owned patents (excluding HDMI Forum and NFC Forum)

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C
Applicable to submitter (C1)	Obligation (1)	–	Obligation (stressed)	Left to the accredited SSO (2)	Obligation	Obligation	Obligation	–
Applicable to Working Group participant (C1)	Obligation (1)	Obligation	Obligation	Left to the accredited SSO (2)	Obligation	Obligation	Obligation	–
Applicable to WG non-participant (C1)	Voluntary	Voluntary (encouraged)	Obligation	Left to the accredited SSO (2)	Obligation	Voluntary (encouraged)	Not defined	–
Applicable to recipient of draft standard (C1)	Obligation for ISO/IEC only	–	–	–	{Obligation}	Request (no obligation)	–	Obligation
Applicable to non-member owners of essential IPR (C1)	–	Request (no obligation)	– (3)	–	–	–	–	Obligation for members only
Exception rules for disclosure (C2)	–	–	–	–	–	–	–	No disclosure required for RF

Legend: – means this type of disclosure is not explicitly specified in the policy. For the numbered notes, see Annex 1. Indications in **bold**, *italic* refer to the corresponding section in the underlying analysis documents.

ETSI has the broadest disclosure obligation, as it applies to all members and all standards activities, whether these parties are participating in the development of a certain standard or not. While the scope of the disclosure obligation depends on the knowledge of individuals and the companies they work for (more in Section 5.2.2), the obligation in ETSI is nevertheless the widest of any organization in this study. Arguably, such an approach is more feasible for ETSI, which is very focused on one technological area, than for other bodies with much more diverse activities. On the other hand, it is significant that ETSI members (by agreeing to become members) are willing to assume the burdens associated with making disclosures and commitments with respect to such a broad work program.⁶⁸

In many organizations (ITU/ISO/IEC, IEEE, ANSI, IETF, OASIS, and VITA⁶⁹), the disclosure obligation is linked to – among other things – being the submitter of a proposal. At the same time, it is also linked to being a participant in the Working Group (or Technical Committee, or ‘IETF

⁶⁸ Again, disclosure obligations may subject to actual knowledge. In ETSI, a party not participating in a specific project does not have obligations to disclose patents it does not know about (within the limitations of the rules defining knowledge, see Section 5.2.2) so the contrast between ETSI and other bodies that have different non-participant rules may be smaller than it seems.

discussion', etc.). While a submitter will typically also be a participant, this is not necessarily the case, and to address such situations, many policies define these obligations separately.

ISO and IEC include a specific disclosure obligation applicable to recipients of a draft standard. While this may sound unusual, it is aimed at clarifying that the policy applies to people and companies participating through a national standards body process (e.g., national bodies such as DIN in Germany, AFNOR in France, and ANSI in the US). Presumably it is not intended to apply to anyone who (perhaps even inadvertently) reads the draft standard. As with other overly broad statements that we have highlighted, greater precision in language would be useful to avoid confusion, and also lessen the chance that a court would fail to enforce obligations assumed upon those that the policy truly intended to bind. W3C also assigns a disclosure obligation on recipients of the standard due to the fact that non-members are allowed to participate as well as members (with similar possible consequences).

IEEE and W3C have additional rules where the standards organization can send individual specific disclosure requests to companies (members and non-members) who are suspected of owning patents. In IEEE, fulfilling such a request is voluntary, while in W3C, members are obliged to respond (and non-members are not). Also some other bodies do send out such requests, but typically not so much for disclosure but for obtaining a licensing commitment (e.g. in ETSI).

In W3C, we should first stress that it has a 'light weight' disclosure model which does not require patent disclosures by Working Group Participants; Those participants have made a commitment to license essential claims on a RF basis, so they only need disclosure when seeking to exclude a patent from the RF licensing obligation. In those cases that disclosure obligations nevertheless exist, then they arise when an individual representing a member organization receives any version of a (draft) Recommendation that reaches a new maturity level within the adoptive process. These documents include a 'disclosure request'. As clarified by a W3C representative: *"A disclosure request goes out to all W3C WG participants, including Members, Team, and invited experts, putting on them the obligation to disclose relevant patents. People writing to or reading a list (whether archive or by subscription) do not incur obligations merely through that action; their obligations derive from agreements."* Invited experts are also subject to a disclosure obligation that arises from an 'expert agreement' which they are required to sign before they can act as such. W3C furthermore has a significant exception rule: when IPR owners are willing to license on royalty free terms (which is sought by this SSO), they are relieved from a disclosure obligation. In the words of the W3C representative: *'Thus compliance with the patent policy is streamlined for the default case where a participant commits to royalty-free licensing in bulk.'* The W3C's royalty-free "default mode" means that the obligation to disclose will only arise if a WG participant (a) is not a submitter, and (b) files for an exclusion of their Essential Claims within a pre-specified time window.

In NFC Forum, the situation is somewhat unusual. Members are required to disclose specific patent claims *only* for (1) those patents that are exceptions to the ‘default licensing mode’ the member has chosen. If a member commits to RAND licensing terms on a royalty-free basis (RAND-RF), it is only required to disclose patents available for RAND licensing for a fee, and if a member commits to RAND licensing for a fee, it need only disclose patents it would license on RAND-RF terms, and (2) those patent claims a member is not willing to license at all.⁷⁰ What makes the term unusual is that the disclosure of essential claims would be more useful where the right to charge a fee is reserved (and where the Working Group might therefore wish to design around the potential infringement) than where royalty free licensing has been promised. Furthermore, all members (existing as well as new ones) are required to make licensing commitments, whether or not they own essential IPR. So the existence of a licensing commitment does not disclose whether that party believes to own patents with essential claims.

5.1.2 Nature of disclosure rules for patents with essential claims owned by third parties

All of the SSOs we examined have rules governing the disclosure of known (or suspected) patents with essential claims owned by third parties – who might themselves be members, or participants, or not. Table 6 provides an overview.

Table 6: Nature of disclosure rules for patents with essential claims owned by third parties (excluding HDMI Forum and NFC Forum)

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C
Nature of disclosure rules for patents held by third parties (C1, C4)	Obligatory for WG participant	Voluntary (encouraged) (1)	Obligation	Left to the accredited SSO (2)	Voluntary (encouraged)	[Obligatory for WG participant] (3)	Depends (4)	Limited obligation (5)
Third party patent disclosure rules lifted if confidentiality is breached	–	–	–	–	–	Yes	Yes	Yes

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in **bold**, *italic* refer to the corresponding section in the underlying analysis documents.

Some selected policy elements:

- In ETSI, disclosure of patents with essential claims held by third parties is obligatory. We have no information, however, regarding to what degree such disclosures actually take place. In the common ITU/ISO/IEC policy and in OASIS it is also obligatory, but for WG participants only (again, we have no insight into actual practices). For any of these bodies, it is understood that such disclosure can only be to the knowledge of members.

⁷⁰ When we double-checked with NFC Forum whether this was indeed the correct interpretation, their representative clarified: *Your understanding of the Forum’s disclosure mechanism is correct. The policy was a result of long discussion between the founding members in 2004, and at this late date it is not possible to recall why this specific decision was made.*”

- VITA has an interesting approach: the disclosure of patents with essential claims held by third parties is obligatory in as much as the member in question is *licensing in* this patent (i.e. is a *licensee*, not the owner) and thus is both aware of its existence and scope.
- In other bodies such third party disclosure is voluntary (although usually encouraged), where IEEE especially stressed this encouragement if the suspected essential patent claim is held by a non-participant (which does not have a licensing obligation).

For third-party patent claims, disclosing third-party essential patents could result in a breach of confidentiality, for instance if the member is a licensee and signed a Non-Disclosure Agreement. OASIS, VITA and W3C recognize this issue and relieve parties of their obligation if this is the case; the other standards setting bodies do not mention this.

5.2 Disclosure in relation to organizations and individuals' knowledge

None of the disclosure rules we have seen are absolute in nature. All of them have rules that are seen in the context of the knowledge that an organization or individual actually has in terms of its own IPR and in terms of the standard in question, and what it might need to do to generate that knowledge. IPR policies vary in how explicitly they address this issue.

On the one hand, in the interest of the community of future implementers of a standard community as a whole, there is a desire to make the disclosure process as inclusive (complete) as possible. On the other hand, and as earlier noted, especially large firms may (and do) argue that it would be unreasonable to expect their individual employees (or, arguably, the organizations as a whole) to know everything about a vast patent portfolio, and face penalties if they make an innocent error or omission. Members with few, or no, patents may be less sympathetic to this concern, although if they become members of SSOs that require all members to make disclosures, and which have many active working groups, such companies might not have the resources to monitor every standardization activity in a given SSO. Almost all IPR policies try to find a balance on this issue, albeit in different ways.

Table 7 summarizes the key aspects, which are further discussed in the subsections below.

Table 7: Assumed knowledge of IPR and of (draft) standards for which they might be essential (excluding HDMI Forum and NFC Forum)

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C
Actually essential, potentially essential, may be essential (§ 5.2.1) (C6)	Inconsistent (1)	'Potentially essential' (2)	'May be or may become' (3)	n/a (4)	'Cover or may cover'	'May contain', 'might become'	Believed to be (actually) essential	[Actually essential]
Assumed knowledge of individual or organization (§ 5.2.2) (C7)	'Known to the party participating'	'Personally aware'	'Reasonable endeavors'	n/a (4)	'Reasonably and personally know' (5)	'Actual knowledge'	'Reasonably inquiry into own patents'	'Actual knowledge' of individual
Good Faith requirement (§ 5.2.3) (C7)	Yes	Yes	Yes for submitters	n/a (4)	[Yes]	(6)	Yes	Yes
Patent searches (§ 5.2.4) (C8)	Not required	Not required	Not required	Not required	Not required	Not required	Not required [7]	Not required

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in **bold**, *italic* refer to the corresponding section in the underlying analysis documents.

5.2.1 Actually essential, potentially essential, may be essential

Most policies have obligation rules for patent claims that *may* potentially be essential. This is a conscious choice to prefer false positives (i.e. type 1 errors) over false negatives (type 2 errors). In other words, these policies tend to err on the side of over-disclosure rather than under-disclosure. This approach reduces the risk that truly essential patent claims are overlooked, but at a cost that the final list will also include many patent claims that are not actually essential. Using words such as 'potentially essential' can also enable use of a single, universal disclosure definition for both the early phase (when technical proposals are being submitted and it is not clear yet whether a proposed technology is included or not) and the later phase (when the standard is finished and 'formal' disclosure takes place). If a definition would only be about actual essentiality, then disclosure could not occur until just before the final adoption of the standard, while this information is typically desired in an earlier phase. A disadvantage of the single, universal definition above is of course that the definition might be undesirably broad for the latter function. An ETSI representative clarified that the language of 'may be or may become' *'[...]is not only an extension as to what should be declared but is also to be seen as a safeguard as essentiality will finally only be determined by a patent court and not by an owner or potential licensor, therefore this formulation has to be seen under this disclaimer.*

Excerpt of Table 7

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C
Actually essential, potentially essential, may be essential (C6)	Inconsistent (1)	'Potentially essential' (2)	'May be or may become' (3)	n/a (4)	'Cover or may cover'	'May contain', 'might become'	Believed to be (actually) essential	[Actually essential]

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in **bold**, *italic* refer to the corresponding section in the underlying analysis documents.

An added disadvantage of permitting over-disclosure is that this action can be abused: if scores of claims are disclosed, it becomes overly burdensome for an implementer to decide which claims may, or may not, actually be essential. This might be more than an academic discussion, and might also seriously blur both the understanding of the essential patent portfolio of a single firm as well as that of all firms for a given standard. Over-disclosure has, perhaps not surprisingly, therefore been an issue of interest to some courts; in one case, a UK court agreed with the concept of ‘declarations of non-essentiality’.⁷¹ The court may have had these issues in mind when it determined that a disclosed patent was *not* to be essential to the standard. Having said this, not every SSO member that over-discloses essential claims does so with bad intent; it may also be the result of responding very early to the call for patents, or of simply seeking to minimize the amount of effort invested in complying with its disclosure obligations.

5.2.2 *Assumed knowledge of an individual or organization*

Many policies link their disclosure obligation to the knowledge an organization has of its own patents with essential claims (and sometimes those owned by others), and in particular to the knowledge individual participants have about the existence of such essential IPR. A policy will also ideally attempt to address the degree of knowledge an organization or individual is *supposed* to have. The question is meaningful, due to the obvious ways in which a member can seek to manipulate a situation.

For example, to what extent (if at all) are participants assumed to know about their company’s patent portfolios, or even to become aware of potentially essential claims? Should the rules seek to prevent a (malevolent) firm from sending ‘unknowledgeable’ individuals to participate in meetings just to escape the disclosure of essential claims, or from simply refraining from informing their staff about their own patents? At the same time, it is arguably unfair to require companies of all sizes and types to conform to a single set of internal rules or practices.

Excerpt of Table 7

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C
Assumed knowledge of individual or organization (C7)	‘known to the party participating’	‘Personally aware’	‘Reasonable endeavors’	n/a (4)	‘Reasonably expected to know’ (5)	‘Actual knowledge’	‘Reasonably inquiry into own patents’	‘Actual knowledge’ of individual

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in bold, italic refer to the corresponding section in the underlying analysis documents.

Some IPR policies address the ‘assumed knowledge’ issue, while others do not. Below, we discuss the rules for some selected examples, ranging from policies with lower requirements to those with higher requirements:

⁷¹ See Myles Jelf and Michael Stevenson (2008). *Nokia v IDC: an essentially English judgment*. *Journal of Intellectual Property Law & Practice*, 2008, Vol. 3, No.7, p. 457-460.

- IEEE imposes a disclosure obligation relating to essential claims of which the individual participant is ‘personally aware’ of, and ITU/ISO/IEC refers to information ‘known to the participating party’; the concept of implied knowledge is not addressed. W3C’s disclosure is also conditional on the actual knowledge of an individual participant, and clarifies that “the individual is not required to contact any other colleagues at his or her firm that might be knowledgeable”. As explained above, the W3C’s disclosure requirement is triggered by receiving a draft standard (‘recommendation’) while clarifying the recipient is not required to read the document (and if it does not do so, it does not become subject to a duty to disclose).
- In IETF, the disclosure obligation is for essential IPR that is “reasonably and personally known” to an individual participant.⁷² This policy also explains that this wording is intended to bar an organization from purposely keeping an individual in the dark about patents or patent applications simply to avoid the disclosure requirement. IETF furthermore explains that should an individual be in a situation where his or her company does not permit him or her to disclose information, this individual should refrain entirely from participating.
- ETSI’s policy stipulates that to meet its disclosure obligation, a member is required to use ‘reasonable endeavors’. The members are “invited to investigate in their company whether their company does own IPRs which are, or are likely to become Essential in respect of the work of the Technical Body”. The requirement for ‘reasonable endeavors’ applies even more so for those members submitting proposals, who must provide information on a ‘bona fide basis’. In earlier versions of the ETSI policy, disclosure was limited to patents the participants ‘were aware of’ but under pressure from the European Commission, this phrase was removed.⁷³ Note, however, that ‘reasonable endeavors’ do not entail patent searches (see below).
- VITA puts the bar higher than most other bodies, requiring a “good faith and reasonable inquiry” into patents owned by the member. An implementation plan, distributed to all members, provides guidance on what degree of effort this requirement entails: good faith and reasonable inquiry includes the WG Member using reasonable efforts to identify, contact, and discuss the Draft VSO Specification with: (1) individuals at the VITA Member Company who are experts in the relevant subject area; and (2) the company’s attorneys responsible for the patent work in the relevant subject area.” Although ‘full’ patent searches as such are not required by VITA, the language quoted clearly requires that a conscientious effort be made that may begin to approach such a search.

⁷² This is the phrasing used by IEEE representatives. The exact full text in the policy says: ‘[IPR] an individual knows personally or, because of the job the individual holds, would reasonably be expected to know.’.

⁷³ In ETSI, an older version of the policy stipulated disclosure of patents which the member was ‘aware of’, but this phrase was removed after the European Commission argued that this was a weakness in the policy and could lead to patent ambush. The Commission felt that an obligation for ‘reasonable endeavors’ was much more advisable. For a discussion on these changes and the underlying debate, see ETSI IPR Guide, at §4.6.2.1.

5.2.3 Good Faith requirement, due process

In addition to the requirements already discussed, some policies explicitly state that patent disclosures must be made in *good faith*. This implies certain modes of behavior by members of an SSO. For instance, it could be argued that a company is not acting in good faith if it *purposely* (i.e., with the intention of circumventing IPR policy rules) sends delegates to participate at standards setting meetings who are not personally aware of certain relevant patents. Though it might be argued that similar good faith or due process obligations may automatically arise out of general law, this would be dependent on the applicable statutory and case law of the jurisdiction in question.⁷⁴

Excerpt of Table 7

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C
Good Faith requirement (C7)	Yes	Yes	Yes for submitters	n/a (4)	[Yes]	(6)	Yes	Yes

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in bold, italic refer to the corresponding section in the underlying analysis documents.

5.2.4 Patent search requirements

All the SSOs we examined explicitly state that patent searches are not required, and that nothing in the policy would give rise to an obligation to perform such a search. Some add that a party is free to conduct a patent search if it wishes to do so.

Excerpt of Table 7

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C
Patent searches (C8)	Not required	Not required	Not required	Not required	Not required	Not required	Not required [7]	Not required

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in bold, italic refer to the corresponding section in the underlying analysis documents.

5.3 Timing of patent disclosure

The point *when* a party must disclose its patents with essential claims has been a sensitive topic from both a legal and a pragmatic point of view. If disclosure is (very) late, those developing the standard may not be aware of patents with essential claims before it becomes difficult and time consuming to backtrack in order to avoid infringement. Consequently, they might include technologies without realizing that these will carry licensing costs, or even run the risk that these technologies are not available for licensing at all. Such issues are particularly painful if the

⁷⁴ To the chagrin of many, the Administrative Law Judge that heard the FTC's case against Rambus Incorporated held that participants in SSOs do not have a duty of good faith to each other. For this reason, SSOs would do well to explicitly provide in their IPR policies that those that participate in their technical processes do in fact assume such a duty.

technology in question was proposed by one of the participants who failed to provide timely disclosure of patents with essential claims and alternative proposals were available that might have imposed no economic obligations upon implementers at all.

On the other hand, earlier is not always better. If the standard in development is still immature, it will be difficult or impossible for parties to determine whether certain patented technologies are essential to the standard or not. This can significantly reduce disclosure quality (both false positives as well as false negatives), even to the degree of non-information. In addition, if the standard in development covers technology that is covered by recent patent applications (and this is often the case⁷⁵), there is additional uncertainty. As earlier noted, a fair share of patent applications will never mature into issued patents, and for those that do, the scope of the allowed patent claims is often much narrower than that of those set forth in the original application (e.g., where the patent examiner has turned the ‘dreaded tiger’ into a ‘little cat’). In such cases, early disclosure can lead to false positives – disclosed patent applications that are eventually not essential.^{76, 77}

This reality presents standards setting organizations and their members with a dilemma. Would they rather have ‘early warnings’ – knowing that this will result in a larger degree of error, or rather have a somewhat later disclosure, but of better reliability. One obvious compromise – requiring formal (and detailed) disclosures both early and late – is unattractive by reason of the extra effort involved. In this light, the practice of requiring less formal patent calls can be seen as a compromise.

Table 8: Nature of disclosure rules (excluding HDMI Forum and NFC Forum)

	ITU/ISO/IEC	IEEE (1)	ETSI	ANSI	IETF	OASIS	VITA	W3C
Timing of disclosure (C3)	‘from the outset’ ‘as early as possible’ Work has reached sufficiently mature level Reasonably possible to assess	During meetings of Working Groups	‘Timely fashion’	Work has sufficiently mature level	ASAP after publication of contribution	Not defined	Early; 4 categories defined	As soon as practically possible after receiving draft recommendation {Earlier for patent applications based on W3C work} (1)

Accolade brackets { } indicate that is not defined in the policy but it was clarified as such by a representative of the SDO. Indications in bold, italic refer to the corresponding section in the underlying analysis documents.

⁷⁵ One study shows that for the 3G mobile telecommunications standards, the lion’s share of patents was filed at about the same time the patent was drafted. See Bekkers, R., & West, J. (2009). The limits to IPR standardization policies as evidenced by strategic patenting in UMTS. Telecommunications Policy, 33(1-2), 80-97.

⁷⁶ This is especially true for the US ‘provisional applications’ in the /90 and /91 series. For more information on these types of applications, see www.uspto.gov/patents/resources/types/provapp.jsp.

⁷⁷ An additional problem with early disclosure is that of unpublished patent applications, whose content is confidential.

Table 8 shows what the examined IPR policies specify in terms of the timing of disclosure. In some cases, it is linked to events (meetings, or distribution of documents); in other cases, it is related to the maturity phase of the standard. Below we discuss some selected examples:

- ANSI promotes early disclosure (even though its baseline policy does not include requirements for a disclosure obligation), but its documents also include a discussion on the trade-off mentioned above. The same is true for W3C.
- ETSI requires that disclosure is done in a ‘timely fashion’, and also forbids what it refers to as ‘intentional delay’, which means it can be demonstrated that a member has deliberately withheld IPR disclosures significantly beyond what would be expected from normal considerations of "Timeliness". Intentional delay is seen as a breach of ETSI policy and can be sanctioned.
- ITU/ISO/IEC require disclosures to be made ‘from the outset’ and ‘as early as possible’. Yet, from the guidelines published by these bodies, it can also be understood that they appreciate the dilemma discussed above, and that disclosures should be made when work has reached a sufficiently mature level that it becomes reasonably possible to assess essentiality.
- Several policies (including those of ITU/ISO/IEC, and ETSI) specify that the chairman of technical meetings must remind all participants to disclose patents with essential claims during that meeting (i.e., a call for patents). In many organizations, distributed draft versions (in various maturity phases) of a standard also remind parties of their disclosure obligations.
- The VITA policy includes strict and precise definitions on when a disclosure has to be made, often expressed in number of days after a specified event.⁷⁸ In addition, VITA offers an extensive guide on timing of disclosure (in its ‘Implementation Plan’).
- W3C adds an interesting additional element. A W3C representative clarified: *“The patent policy states that if a participant files for a patent based on W3C work, it must disclose that application earlier than disclosure would otherwise be required. It makes no legal assertions about the validity of such applications.”*

5.4 Information to be provided in disclosures

A logical next question is *what* specific information must be disclosed. This determines, to a considerable degree, how much transparency is created by the disclosure process. Again, *Table 9* provides an overview while the subsections thereafter discuss various aspects of disclosure in more detail. As explained above, disclosure processes are often two-fold: one part at meetings (not formalized and typically not publicly available) and one formalized part, the results of which are typically publicly available. The latter procedure is often combined with the licensing

⁷⁸ These can be summarized as follows: (1) Any member proposing to initiate new proceedings by proposing a specification for development must make these disclosures prior to formation of a working group, (2) Upon WG formation, all WG members must make the disclosures within 60 days, (3) All WG members must make the disclosures (to the extent not previously made) no later than 15 days after publication of a draft specification, (4) All members participating at WG meetings must make disclosures at the meeting (orally) as well as by the declaration form within 30 days after the meeting.

commitment process and is accomplished through a single form/declaration. In this section, we focus on the second, more formalized process where applicable.

Table 9: Information to be provided in disclosures (excluding HDMI Forum and NFC Forum)

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C
Blanket disclosures allowed (§ 5.4.1) (C13)	Yes (ITU: unless unwilling to license)	Yes	No (1)	n/a (2)	Only for RF	No	No	(3)
Requirement for disclosing equivalent patents (i.e. patent family members) in different patent jurisdictions (§ 5.4.2) (C15)	Disclosing all family members is 'expected' (4)	Not specified	Only one member of a family is required	Disclosing all family members is recommended (5)	Not specified	Not specified	Not specified	Not specified
Use of disclosure template or form (§ 5.4.3) (C16)	Obligatory	Obligatory	Obligatory (6)	Left to the accredited SSO	{Optional} (7)	Form not provided	Obligatory	{Optional}
Provisions concerning updating of disclosures (§ 0) (C17)	Not specified	Not specified	Updating is encouraged	Not specified	Update requests may be sent by IETF (8) (or volunteered)	Not specified	Not specified	Not specified
Are patent disclosures being made public? (§ 5.4.5) (C20)	Yes	Yes	Yes (upgraded)	Not specified (may vary per SSO)	Yes	Yes	No (yes for ANS) (9)	Yes
Provisions that allow SSO to remove or annotate disclosures (§ 5.4.6) (C21)	Not specified	Not specified	Yes	Not specified	Not specified	Not specified	Not specified	Not specified

For the numbered notes, see Annex 1. Accolade brackets { } indicate that is not defined in the policy but it was clarified as such by a representative of the SDO. Indications in **bold, italic** text refer to the corresponding section in the underlying analysis documents.

5.4.1 Specific vs. blanket disclosures

Disclosures that identify the *specific* patents that have essential claims believed to be essential (usually together with mentioning the section of a draft standard under which infringement would arise) obviously provide more complete information to the outside world than blanket disclosures (i.e. statements that a company believes that it owns essential claims, without identifying them). Some patent owners would rather not supply specific information on the identities of the patents that contain essential claims, either because they are not eager to incur the costs associated with collecting and supplying this information, or for strategic reasons,⁷⁹ or simply if they are not planning to proactively seek patent licenses from implementers but they want to retain defensive value in their patents with essential claims. Some SSOs require specific patent disclosures, while others allow or only ask for blanket disclosures (defined here as disclosures that do not require the identification of specific patents with claims asserted to be essential). Sometimes, blanket disclosures are only required when certain conditions are met.

⁷⁹ In licensing negotiations, a patent owner can be in an advantageous position if it has more complete information on the extent of its essential patent portfolio than the prospective licensee.

Excerpt of Table 9

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C
Blanket disclosures allowed (C13)	Yes (ITU: unless unwilling to license)	Yes	No (1)	n/a (2)	Only for RF	No	No	(3)

For the numbered notes, see Annex 1. Indications in bold, italic refer to the corresponding section in the underlying analysis documents.

Below we discuss selected examples of patent information required by the studied SSOs:

- ETSI, OASIS and VITA require specific disclosures and do not allow blanket disclosures.⁸⁰ Having said this, ETSI's IPR database nevertheless includes a number of blanket disclosures.⁸¹
- The IEEE policy and the common ITU/ISO/IEC policy allow parties to file blanket disclosures. For ITU only, there is one exception: if a party declares it is not willing to license its patents with essential claims, it is required to identify patents that have essential claims as well as information on what sections of the standards are covered by that patent, and a description of the patents – this way the SSO knows in what areas it needs to redesign its standards so these patents are no longer essential). In the same situation at IEC and ISO, such information is not required but it is 'strongly desired'.
- At IETF, blanket disclosures are only allowed if the owner also commits to licensing its patents RAND-RF terms, and has disclosed all other licensing terms and conditions.

5.4.2 Requirements for disclosing equivalent patents in other patent jurisdictions

Patents and most other IPRs are defined by, and enforceable under, national laws. If patent protection for a given invention is applied for in more than one country, the resulting patents are said to be part of the same patent family. The relationship among patent family members can be quite complex, because the exact scope of all these patents can vary considerably from jurisdiction to jurisdiction.⁸² For this reason, various patent family definitions exist.⁸³

⁸⁰ Although ETSI recently introduced a 'General IP Licensing Declaration (GL)', this is not a blanket disclosure. The GL is intended to provide information at an early phase about willingness to license patents with essential claims on RAND conditions, but does not require the member to confirm that it believes it owns essential IPR. Furthermore, ETSI clearly states that this does not replace the obligatory disclosure of specific patent identities.

⁸¹ Although the current ETSI submission process does not allow parties to file blanket disclosures, the older process used free format declarations and consequently, the (extensive) ETSI disclosure database still includes around 90 statements that are effectively blanket declarations. While 90 statements is only a fraction of all the statements, the submitters include some very large companies that very well may own extensive essential IP portfolios.

⁸² Patent law as well as the interpretation by patent examiners varies from country to country. Because of these variations, an applicant for a patent covering the same invention may feel it necessary to describe claims in different ways in different countries.

An IPR policy would therefore ideally be precise in specifying which patent claim(s), under which jurisdictions, a party is required or encouraged to disclose. If only required to disclose patent claims in one jurisdiction, it might be hard to identify whether the subject invention is in fact also protected in another (perhaps much larger) market. This is particularly troublesome if parties supply hard to trace patent identities, such as serial application numbers from less well-known patent offices. On the other hand, if patent owners are required to disclose all individual family members separately, then it might be hard to trace which patents are part of the same family, and the portfolio might look much larger than it actually is. An ITU representative clarified that while this is not stated in the policy, *“However, considering the global reach of an ITU Recommendation, it is expected that the whole patent family protecting a single invention will be disclosed.”*

Excerpt of Table 9

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C
Requirement for disclosing equivalent patents (i.e. patent family members) in different patent jurisdictions (C15)	Disclosing all family members is ‘expected’ (4)	Not specified	Only one member of a family is required	Disclosing all family members is recommended (5)	Not specified	Not specified	Not specified	Not specified

For the numbered notes, see Annex 1. Indications in **bold, italic** text refer to the corresponding section in the underlying analysis documents.

While the policies of several SSO in the study set (e.g., W3C) include in their definition of essentiality *“claims under patents and/or patent applications anywhere in the world”*, only three out of ten SSOs specify how a company should deal with the disclosure of equivalent patents:

- ETSI’s policy specifies that its disclosure requirements are satisfied if *at least one* member of a patent family is disclosed.⁸⁴ In practice, many ETSI members disclose more than one patent per family. The ETSI database, now contains information on patent families, due to a recent cooperation between ETSI and the European Patent Office.
- ANSI recommends its accredited SSOs consider such a requirement in their policies.

5.4.3 *Use of disclosure template or form*

Now that the prevalence of essential claims in ICF standards has become so extensive, the importance of precise reporting of essential claims, and of requiring uniform licensing commitments in connection with such claims, has become increasingly evident. As a result, SSOs increasingly require the use of standard forms to ensure that disclosed information is complete,

⁸³ Two common definitions are the INPADOC patent family (a broad definition where family members share at least one priority document) and the DOCDB definition (a narrower definition whereby family members need to share exactly the same priority documents).

⁸⁴ ETSI defines a patent family as: *‘all the documents having at least one priority in common, including the priority document(s) themselves’*.

clear, uniform, and easy to consult once published. The consistent use of forms can also help to ensure that disclosures made are in fact in line with applicable requirements. In most cases, these forms are used both to make disclosures and to choose among available options relating to licensing. As earlier noted, disclosure of patents with essential claims is most frequently required when a respondent indicates on a form that it is unwilling to provide a license on RAND (or, applicable under the policy in question, RAND-FR) terms.

Excerpt of Table 9

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C
Use of disclosure template or form (C16)	Obligatory	Obligatory	Obligatory (6)	Left to the accredited SSO	{Optional} (7)	Form not provided	Obligatory	{Optional}

For the numbered notes, see Annex 1. Accolade brackets { } indicate that is not defined in the policy but it was clarified as such by a representative of the SDO. Indications in **bold, italic** text refer to the corresponding section in the underlying analysis documents.

Table 9 shows that many SSOs now use forms or templates. These are mostly submitted via web-based systems to ensure that all information is provided properly, and to lessen SSO administrative burdens.⁸⁵ However, when SSOs introduce these forms long after creating the IPR policy, there can be inconsistencies between data obtained before and after the use of forms was introduced (or made mandatory).

5.4.4 Provisions concerning updating of disclosures

As previously mentioned in Section 5.3, there are various reasons why patent claims (or patent applications) disclosed as essential at one time may not be essential at a later time. Briefly, the main reasons can be:

- The patent application was rejected or abandoned;
- The scope of the issued patent was narrowed or modified;
- The final version of the standard no longer covered the patented technology;
- The relevant patents expired;
- Patents with essential claims were successfully challenged in court, or rescinded on reexamination by the relevant patent authority.

Even if claims under a disclosed patent or patent application remain essential to the standard, new information may become available over time, in the form of serial patent application numbers, published application numbers, and identification numbers of issued patents. Changes of patent ownership of patents are occurring with increasing frequency as well.

Notwithstanding the above, few IPR policies provide guidance on how disclosure information is to be updated, let alone whether there is any requirement to do so. Only two organizations have clauses on this topic:

⁸⁵ IETF, NFC Forum and OASIS (at least) among the study group each use a web-based system. Alternatively, parties can submit forms via email. However, if such emails do not comply with the specific sections of the IPR policy, they will be published but marked as ‘non-compliant’.

- At IETF, the executive director can ask a party that has previously made a disclosure to provide updated information, such as the issuance of an applied patent, the publication of a previously unpublished patent application, or the abandonment of a patent. Note, however, that these update requests are triggered by the IETF, and that it is not the responsibility of disclosers to make such updates on their own initiatives (although revised disclosures *may* be submitted at any time). We have no information on whether such updates are requested in a structural way, or whether they are more incidental in nature. In addition, patent holders can update their disclosures voluntarily at any time.
- At ETSI, updating disclosure information is encouraged, but there is no requirement to do so and we have no information on how often parties actually update this data.

Excerpt of Table 9

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C
Provisions concerning updating of disclosures (C17)	Not specified	Not specified	Updating is encouraged	Not specified	Update requests may be sent by IETF (8) (or volunteered)	Not specified	Not specified	Not specified

For the numbered notes, see Annex 1. Indications in bold, italic refer to the corresponding section in the underlying analysis documents.

While interim updating of patent information is not required under most policies, periodic updating may occur in connection with the release of a new version of a standard, at which time the submission of new disclosure forms would typically be required. However, this requirement would only apply to current members of the SSO that were bound to submit forms, which not infrequently would not include all of the entities that previously had made disclosures.

5.4.5 Are patent disclosures made public?

While most SSOs make patent disclosures public (at least those made in connection with the formal process, rather than those made in connection with meeting patent calls), this is not the case for VITA. At VITA, disclosure and declarations records are placed in the organization's files, but the policy does not explain to whom these are available. They cannot be accessed by the public from via the Internet. They are, however, available to VITA members, and they are made available to implementers of a VITA standard upon request.⁸⁶ Disclosures concerning VITA standards that have been submitted to ANSI for adoption as American National Standards (ANS) are made public by ANSI.

Excerpt of Table 9

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C
Are patent disclosures being made public?) (C20)	Yes	Yes	Yes (upgraded)	Not specified (may very per SSO)	Yes	Yes	No (yes for ANS) (9)	Yes

For the numbered notes, see Annex 1. Indications in bold, italic refer to the corresponding section in the underlying analysis documents.

⁸⁶ See the Supplement report for detailed information.

While all other organizations in the study set make disclosures public, there is a very large diversity in the way they do so. (The reader is encouraged to review the IPR databases of the studied SSOs on the Web which are publicly viewable; their URLs are provided in the Supplement reports.) Although the ITU/ISO/IEC SSOs share a common patent policy, even here the disclosure formats each organization employs differs considerably one from another, and sometimes even within the SSO.⁸⁷

Arguably, ETSI has the most sophisticated online public disclosures database. In 2009 it started the DAtabase REstructuring (DARE) project, which resulted in an overhaul of this database in 2011, and with the cooperation of the European Patent Office (EPO), the identity of disclosed patents was matched with that of the EPO database on worldwide patents. As a result, patents in the ETSI database are now much easier to identify and patent family members can be checked, and the information originally provided by members has been complemented and upgraded. (Members are contacted in case of any doubt about this data.) Another element of the overhaul of the ETSI online database is that now the older, original (facsimile) declarations can be consulted by the public, which is a feature some but certainly not all SSOs offer. (Note, however, that the information is not updated in all the ways discussed in Section 0, because the database does not state whether a patent is still essential.)

5.4.6 Removal or annotation of disclosure record by SSOs

Situations occasionally arise in which the self-asserted essentiality of a patent claim contained in a disclosure is disputed by another party. Sometimes (but much less often) such party would argue that such a disclosure need to be removed from the IPR database, perhaps because it has a commercial interest of having it removed.

Excerpt of Table 9

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C
Provisions that allow SSO to remove or annotate disclosures (C21)	Not specified	Not specified	Yes	Not specified	Not specified	Not specified	Not specified	Not specified

For the numbered notes, see Annex 1. Indications in bold, italic refer to the corresponding section in the underlying analysis documents.

In one very public instance, the European Commission requested that ETSI remove a particular patent claim previously disclosed and asserted by its owner as being essential. DG Competition of the European Commission argued that the presence of this claim amounted to a '*measurable distortion of competition in the relevant market*'.⁸⁸ Such requests for removal are a sensitive issue, because SSOs usually take the position that they will not make any determination of essentiality,

⁸⁷ The format and actual available information can differ considerably. ITU has not one, but two quite different databases (for ITU-R and ITU-T, respectively). ISO has separate but identical databases for patents on JTC-1 standards and those on other standards. These databases are in the form of long, unstructured text files. Only IEC allows access to the original declarations in facsimile format. [After the data collection for this report was completed, ISO updated its online database and now offers a single MS Excel file that includes all disclosures for both ISO and JTC-1 in a structured way.]

⁸⁸ For more information, see <http://www.gtwassociates.com/answers/CommissionETSI.html>.

and leave this up to courts. In addition, SSOs typically have only modest resources, and as membership organizations, do not wish to become involved in legal disputes. The ETSI policy does include a provision that the General Assembly of this body may decide to remove a disclosure or may to decide to attach additional information (not from the patent owner) to the disclosure.

5.5 Whether content of technical meetings is public or not

Although not related directly to essential claim disclosure and the making of licensing commitments, a logically related question involves the overall transparency of an SSO, and most specifically, whether non-members can participate in or observe Working Group meetings and/or view any minutes or reports of such meetings. This is especially relevant for patent examiners, who need to consider whether such information should or should not be considered when examining prior art in patent applications.

Table 10: Whether the content of technical meetings is public or not

	ITU/ISO/IEC	IEEE (1)	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Content of meetings is public (G3)	{Yes}	- (1)	Yes	Left to the accredited SSO	{Yes}	Yes	{No}	- (1)	{No} (2)	{No}

Accolade brackets { } indicate that is not defined in the policy but it was clarified as such by a representative of the SDO. Indications in **bold, italic** text refer to the corresponding section in the underlying analysis documents.

Table 10 indicates the situation in the SSOs we studied. In most cases, this topic is not specified in the IPR policy. However, representatives of these organizations were able to provide some details. Below we provide a discussion on selected SSOs:

- An ITU representative clarified: *“The assessment of whether such content is public information and whether it should be included in the prior art should be considered in accordance with the rules for substantive examination which govern the competent patent office. That being said, the ITU has already entered into an agreement with the EPO, for granting the latter access to a large volume of data such as technical contributions and draft ITU-T Recommendations used by ITU-T Study Groups at different stages of the standard development process. Such access has been agreed so that EPO can use such documentation for the purposes of the patenting procedure in all its phases, including the compilation and distribution of search reports and inspection files, with a view to improving the quality of patents being granted. Whether such documentation will be considered as prior art is a decision that lies exclusively with the EPO.”*
- In ETSI, the policy specifies that the information disclosed to Technical Bodies is public. However, an exception is made if the provider of the information requested it to be treated as confidential, and the Chairman of the TB has agreed to accept this request.

- An ANSI representative clarified: *“The ANSI Essential Requirements do not require that all documentation related to technical work be made public and it is up to the individual ASDs to make determinations about whether content of meetings and other materials are accessible to the public.”* However, ANSI’s rules of accreditation require that non-members as well as members must be allowed to participate in the standards development processes of accredited SSOs.
- An IETF representative clarified: *“All IETF proceedings are public.”*
- An OASIS representative clarified: *“[It is] public data, and thus potentially treated as known prior art.”* OASIS posts all meeting reports on public portions of its Web site, and Working Group listservs are similarly public.
- A VITA representative clarified that *“Working group meeting minutes, presentations, and other information from the meeting are available to VITA members only, under the members-only section of the VITA website (which requires each member to use a unique member-company user name and password to enter). They are NOT public information. This system allows us to match the accesses to that WG information, by unique company user name and password, to specific IP addresses in the log file. This further allows us to see if any unauthorized accesses are occurring. That information becomes definitive evidence if a third-party non-member were to somehow gain access, read the document drafts, and then assert essential patents against our members [...]. As you can see, if we made all the information from our meetings public, every third-party non-member IP holder and “patent troll” out there would use the data to look for opportunities to assert relevant IP (essential or not) against VITA members. [VITA has] a fiduciary duty to protect our members from such behavior, and defend them should such infringement assertions occur.”*
- An NFC Forum representative clarified: *“Information about and content of meetings of NFC Forum Technical Committees, Working Groups, Task Forces and other Forum groups is not disclosed to the public.”*

5.6 Reflection on disclosure: a dual process

Disclosure is undeniably a critical element of a large number of IPR policies, typically involving a substantial percentage of the text of such documents and being reflected in associated process documents as well. We found many commonalities, but equally many differences in the implementation and details of disclosure obligations. Sometimes the differences can be attributable to legacy issues, because some SSOs have evolved their rules and processes over many years of time, and because updating IPR rules can be difficult and contentious, while other organizations such as consortia that have only recently been formed have had little choice but to adopt detailed, procedurally and legally state of the art IPR policies from the date of formation.

Other policies may include (or lack) terms due to concerns more likely to arise in one technical or business field than another.

Nevertheless, the degree of diversity in requirements, as well as the specific mechanisms chosen by some SSOs, may seem surprising, especially in light of the most obvious purposes for requiring disclosure of essential IPR at all:

1. To allow Working Group members to make appropriate choices concerning the inclusion of technologies (merit vs. costs, availability, etc.);
2. To serve as a record of those from whom licensing commitments may be needed later in the process;
3. To provide information to prospective implementers regarding which companies to approach to seek licenses.⁸⁹
4. To identify those owners of essential claims that need not be approached at all.

Policies are often not explicit about these goals, or any other goals that an individual SSO might choose to pursue. Two exceptions can be found in the IPR policies of IETF, which includes the brief statement that: *“the aim of the disclosure requirement is to provide information about specific IPR against specific technology under discussion in the IETF”*,⁹⁰ and NFC Forum, which states that the SSO adopted its IPR policy and related Rules of Procedure: *“in order to minimize the possibility of inadvertent infringement of the IPR of Members by using or implementing any Consortium Specification”*.

It is also hard to deduce the objectives from the content of the policies. The procedures we examined seem to have elements geared to each of the listed (possible) objectives. As indicated, we mostly observe a dual nature:

- A. Process elements that are geared to the standardization process. This includes elements like disclosure of patent ownership during WG/TC meetings – for instance for proposals brought to the table – or information that is exclusively brought to the attention of the chairman or other SSO officials, by email, orally or otherwise. They might include disclosure of known patents of third parties as well. Note also that this is about disclosure of patents on technologies that are *potentially* included and not on those that are *eventually* included in the final standard. These processes are hardly formalized and not very transparent; this information is typically not publicly available and it is even unclear which members or stakeholders have access to it (only participants at particular meetings? only members who receive the minutes

⁸⁹ There are many reasons why an implementer may decide not to contact a licensor. One is that the specific type of product category it makes does not implement a certain part of the standard. (For instance: whereas the GSM and W-CDMA standard include a definition of SIM cards, this is only implemented in the handset, and not in the infrastructure products. Similarly, an infrastructure provider will not need licenses for a patent on the electrical communications between a SIM card and a phone. Or the parties may already have a broader cross-license agreement in place, or have entered into a less formal “patent détente”.

⁹⁰ This statement is in IETF RFC 3979 at §6.4.3. This statement means the information must be available *at the time of discussion* (so before any decisions) and that it is to be used to inform decisions on inclusions.

of the meetings? only the chairman and officials?). In some bodies like IEEE, these disclosure processes are explicitly used to identify which patent owners to send a request for a licensing commitment ('Letter of Assurance').

B. Process elements that are geared to the licensing commitments. This is the more formalized part of the process, the results of which are typically made public (but not always: VITA). They usually have mandatory forms or templates, and requirements on what needs to be disclosed, what exact information needs to be provided, and so on. These disclosures are preferably not so much about what could have been *potentially* essential, but more about what is *actually* essential on the standard, although lack of updating requirements does not always guarantee this.⁹¹

The dual nature process (often entirely intertwined in IPR policies) makes it hard to understand and assess this important element of IPR policies

⁹¹ For example: in the ETSI IPR database (which combines disclosure and licensing commitments) we find declarations on technologies that were finally never selected, for instance declarations relating to some of the 3G technology proposals. In addition, one can find conditional declarations (conditional on technology selection, or on other conditions).

6 Licensing commitments

Many IPR policies aim to ensure that licenses for patents with essential claims are available to all implementers, or that these patents will not be asserted against implementers of a standards-compliant product.⁹² Many terms have been used to indicate licensing commitments, including *Licensing Statement*, *Undertakings*, *Letter of Assurance*, and *Declaration of Licensing Position* (these are all examples of commitments arising under signed documents). There are also standards organizations where the licensing commitment arises from being a member or a participant, without signing any specific documents in connection with the adoption of a particular standard. These latter policies typically offer an opt-out provision (either from a specific working group, or from the organization itself) for firms that do not wish to make a licensing commitment.

For virtually all SSO's, the minimum goal is to ensure that all known essential IPR is available under RAND license terms. Some SSOs, or discrete working groups within an SSO, may set a higher aim, and seek to ensure that all patents with essential claims are available on a royalty-free basis.

6.1 General commitment procedure

As in previous sections of this report, we first provide an overview of general elements for all policies (Table 11), and then discuss these specific policy elements in subsequent subsections.

⁹² A statement that the owner of an essential claim will not sue an implementer of a compliant product is usually referred to as a 'covenant not to assert,' or a 'non-assertion covenant.' For the sake of simplicity, when we refer to 'licensing commitments', we also include covenants not to assert, while recognizing that such covenants, strictly speaking, are not licensing commitments as such.

Table 11: General licensing commitment procedure

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Method of entering into commitment (§ 6.1.1) (D1)	{Participants are obliged to submit a declaration if triggered by a disclosure} (2) (19) Non-members are requested to confirm their position	Request for declaration sent to firms suspected to own essential IPR	Members who knowingly own essential IPR are obliged to submit declaration (19) Non-members are requested to confirm their position	{Left to the accredited SSO} (2)	Request for declaration sent to firms suspected of owning essential IPR {Though not often used; many IETF participants voluntarily make licensing disclosures}	Licensing commitments arise from participation or contribution	Members who own essential IPR are obliged to submit declaration (19)	Licensing commitments arise from participation (1)	Licensing commitments (= non-assert) arise from membership	All members must respond, regardless of whether they own essential claims
Additional early general licensing (§ 6.1.2) (D1)	ITU: Yes (20)	—	Yes	—	—	—	—	—	—	—
Timing of commitments (§ 6.1.3) (D2)	Participant: at time of disclosure (see § 5.3) Non-participant: upon request	As soon as reasonable possible Upon request {although request procedure not often used}	Member: at time of disclosure (see § 5.3) Also upon request	Upon request	Upon request {although request procedure not often used}	Arises on enrolling in specific Technical Committee	Early; 4 categories defined (linked to disclosure (see § 5.3))	n/a	n/a	Precisely specified for 4 categories of participation
Beneficiaries of commitments (§ 6.1.4) (D5)	Any implementer	Any implementer	Any implementer	Any implementer	Depends on commitment (25)	Any Implementer	Any implementer	Any implementer	Members or licensees of HDMI Forum	Any implementer
Geographic scope of commitment (§6.1.5) (D11)	Worldwide	Worldwide	[Worldwide] (3)	Not specified	Not specified	Worldwide	Worldwide	Worldwide	Worldwide	Worldwide
Commitments (declarations) are irrevocable (§ 6.1.6) (D14)	Yes (upgradable) (4)	Yes	Yes	Not specified	Not specified	Not specified	Yes (upgradable) (4)	Yes (5)	Yes	Yes (7)
Licenses are irrevocable (except as permitted) (§ 6.1.7) (D14)	Not specified	Not specified	Yes (22)	Not specified	Not specified	Yes	[Yes]	[Yes]	n/a (6)	[Yes]
Defensive suspension condition (§ 6.1.7) (D14)	Not specified	Not specified	Not specified	Not specified	Not specified	Allowed	Allowed	Allowed	Not specified	Not specified
Licenses must be perpetual (§ 6.1.8) (D14)	Not specified	Not specified	Not specified	Not specified	Not specified	Yes	Yes	Yes	Not specified	Not specified
Opt-out options (§ 6.1.9) (D7)	Licensing commitment template has option for ‘no license’	Licensing commitment template has option for ‘no license’	Licensing commitment template has option for ‘no license’	Silent (8)	IPR Disclosure template has option for ‘no license’	A specific procedure is available (see text)	{Available} (9)	A specific procedure is available (see text)	None (10)	Yes, via a specific procedure, except for submitters
Reciprocity condition	Bilateral RAND	Not specified	[Bilateral] RAND	Not	[Allowed]	Universal reciprocity	Bilateral RAND	Universal reciprocity	Automatic bilateral	Reciprocity is

(\$ 6.1.10) (D8)	reciprocity allowed		reciprocity allowed	specified		allowed	reciprocity allowed	allowed	reciprocity	permitted
	Bilateral RAND-RF reciprocity allowed (11)									Bilateral RAND-RF reciprocity allowed (11)
Other conditions allowed in commitment (\$ 6.1.11) (D8)	No other conditions allowed (13)	Not addressed	[No other conditions allowed]	Not specified	Allowed and can be listed in licensing commitment	Depends on licensing mode of TC in question (14)	Various	Only some permitted as well as certain customary licensing terms (12)	Not specified	Not specified
Inclusion of sample licensing contract (as part of SSO process) (\$ 6.1.12) (D8)	Not allowed (28)	Possible	(21)	Not specified	[Possible to list all relevant conditions]	Not specified	Encouraged (penalty for those that don't, see § 6.1.13)	Not specified	Not specified	Not specified
Restricted to use necessary to comply to standard (\$ 6.1.13) (D12)	Yes	[Yes] (15)	Yes	Yes	{Depends on commitment} (27)	Yes	Yes	Yes	Yes	Yes
Which essential claims/patents covered by commitment (\$ 6.1.14) (23) (D9)	Any patent for specified standard	Can be chosen by submitter: Any patent claims for specified standard, or claims in specified patents only	Specified patents only In case of GL: All patents for project (24)	Not specified	Specified patent claims only	Participant: any essential claims for specified standard Contributor: essential claims in contribution only	Any patents with essential claims on specified standard	Any patents with essential claims for specified standard, inclusive future patent claims (unless there is a proper exclusion)	Any necessary claims for specified standard	Any necessary claims under Standards as developed For new members: Any necessary claims under existing NFC Forum standards
Commitment involves legal restrictions in infringement cases (\$ 6.1.15) (D13)	Not specified	Not specified	Not specified but discussed	Not specified	Not specified	Not specified	Not specified	Not specified	Not specified	Not specified
Are all commitments made public? (\$ 6.1.16) (D18)	Yes	Yes (16)	Yes (upgraded)	Yes (at ANSI and possibly also at the SSO)	Yes	n/a	No (yes for ANS) (29)	n/a (30)	n/a	No (17)

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. Accolade brackets { } indicate that is not defined in the policy but it was clarified as such by a representative of the SDO. For the numbered notes, see Annex 1. Indications in **bold, italic** text refer to the corresponding section in the underlying analysis documents.

6.1.1 Nature of entering into commitment

SSOs employ a variety of mechanisms to obtain and record licensing commitments. Those in our study set can be placed into three main groups, as summarized in Table 12.

Table 12: Primary mechanism of the nature of entering into licensing commitments

	ITU/ISO/I EC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
General obligation to submit licensing declaration	x		x	-			x			x
Presumed IPR holders receive specific request to submit licensing declaration		x		-	x					
Licensing obligations arise from participation and/or contribution				-		x		x	x	

Below, we will discuss these groups in greater detail.

Group 1: General obligation to submit licensing declaration. This group includes ITU/ISO/IEC, ETSI, VITA and NFC Forum. The obligation applies to all parties that are bound to the policy (usually participants and/or members). Often, the licensing obligation is triggered at the same time as that of the disclosure (which then often share a single form). We note that some of these organization have secondary (complementary) mechanisms, where requests such as those described under Group 2 below may be sent out to suspected IPR holders that are not members or participants (and sometimes also to members that did not yet meet their obligation).

Group 2: Presumed IPR holders receive a specific request to submit a licensing declaration. This group includes IEEE and IETF. The executives of these SSOs send specific requests for declarations to members that might own essential IPR. Members may also take the initiative and disclose their own patents by submitting a declaration without waiting for such a request. In IEEE this is reported as being quite common. A representative of IETF clarified that, in practice, requests are rarely sent to presumed IPR holders, and that many IETF participants voluntarily make licensing disclosures to IETF.⁹³ We nevertheless keep this group separate because from the way the policies are designed, the requests play a central role.⁹⁴

Group 3: Licensing declarations arise from participation and/or contribution: This could also be characterized as ‘licensing by default’ and usually includes opt-out options. OASIS, W3C and HDMI Forum each use this approach. OASIS, which provides multiple levels of commitment

⁹³ An IETF representative clarified: “This being said, many IETF participants voluntarily make licensing disclosures to IETF. As noted in Contreras (2011), at 25-26, of 481 total patent disclosures made from 2007-2010, 366 (76%) contained a voluntary disclosure of licensing terms. Within this number, 283 such disclosures committed the patent holder voluntarily to offer RF terms or not to assert its patents.” Reference: Contreras, J. (2011). An Empirical Study of the Effects of Ex Ante Licensing Disclosure Policies on the Development of Voluntary Technical Standards. National Institute of Standards and Technology (NIST).

⁹⁴ This central role is clearly visible in the IEEE Patent Letter of Assurance (LOA) Process Flowchart, available at <https://development.standards.ieee.org/myproject/Public/mytools/mob/flowchart.pdf>.

for participants, depending on which mode is designated in the charter for a given working group ('Technical Committee'), provides a good example of how this approach can be documented, as its IPR policy includes very clear definitions of how and when commitments arise.⁹⁵ It also offers opt-out options for organizations unwilling to meet certain licensing conditions. Note, however, that an OASIS representative pointed out that members may *also* decide to publish a 'license claim disclosure'" "[...] parties publishing a license claim disclosure may, and often do, announce in that notice (1) the method by which a user may obtain an explicit written license (if such is required or desirable); or (2) other terms of the license offered, which terms must be within the degrees of freedom set by the "IPR Mode" applicable to that TC's outputs."

Interestingly, the very first ETSI IPR policy, adopted in 1993, took a 'licensing by default' approach. However, it was so heavily criticized by members and the European Commission that it was replaced by a new policy in 1994.⁹⁶

Excerpt of Table 11

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Method of entering into commitment (D1)	{Participants are obliged to submit a declaration if triggered by a disclosure} (2) (19) Non-members are requested to confirm their position	Request for declaration sent to firms suspected to own essential IPR	Members who knowingly own essential IPR are obliged to submit declaration (19) Non-members are requested to confirm their position	{Left to the accredited SSO} (2)	Request for declaration sent to firms suspected of owning essential IPR (Though not often used; many IETF participants voluntarily make licensing disclosures)	Licensing commitments arise from participation or contribution	Members who own essential IPR are obliged to submit declaration (19)	Licensing commitments arise from participation (1)	Licensing commitments (= non-assert) arise from membership	All members must respond, regardless of whether they own essential claims

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. Accolade brackets { } indicate that is not defined in the policy but it was clarified as such by a representative of the SDO. For the numbered notes, see Annex 1. Indications in **bold**, *italic* text refer to the corresponding section in the underlying analysis documents.

6.1.2 Procedure for early indication of willingness to license

The IPR policies of an increasing number of SSOs – including ETSI, ITU and ANSI – now encourage patent holders to make an early (voluntary) statement that they may own patent claims that may prove to be essential, and whether they would be willing to license these claims under RAND terms. In this usage, 'early' means that while specific claims cannot yet be identified as

⁹⁵ More specifically, licensing commitments arise when parties meet one of the following two criteria: (1) By submitting a contribution to an OASIS Technical Committee (TC) proposed for inclusion in a standard (which can occur in a meeting, in a teleconference or by a submission to a mailing list). In such case, any patents with essential claims covered by that contribution must be licensed according to the IPR mode designated for the TC in question. (2) By being a 'participant' in the respective TC. The definition of being a participant is precisely defined.

⁹⁶ See Iversen, E. (1999). Standardisation and Intellectual Property Rights: ETSI's controversial search for new IPR-procedures. Proceedings from SIIT'99 - IEEE Conference on Standardisation and Innovation, Aachen, Germany, as well as a summary in Bekkers, R. N. A. (2001). Mobile Telecommunications Standards: GSM, UMTS, TETRA and ERMES. Boston, MA: Artech House on pages 234-241.

essential (e.g., because the draft specification is still in a partial or preliminary state), the member can already make a licensing commitment should it in the future determine it has patents with essential claims. Both ETSI and ITU have developed specific forms for this purpose (ETSI: ‘*General IP Licensing Declaration (GL)*’; ITU: ‘*General Patent Statement and Licensing Declaration for ITU-T or ITU-R Recommendation*’), an important difference being that the ITU declaration is only for IPR on own contributions.

The advantage for the SSO as well as for the participants and implementers of receiving such declarations is that for a given (potential) patent owner there is no risk of learning late in the process that this owner is not willing to license, with all the associated consequences. As a result, participants might feel more comfortable including technologies owned by parties that have made an early commitment, particularly if similar commitments are not made available for alternative technologies. Here also lies the incentive for a patent owner to provide such an early commitment: it reduces the likelihood that standards developers will turn to alternative technologies.

Excerpt of Table 11

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Additional early general licensing (D1)	ITU: Yes (20)	—	Yes	—	—	—	—	—	—	—

The ETSI and ITU forms and templates for early general declarations differ in two important aspects from blanket declarations:

1. They do not imply that the party believes it owns (or may own) essential claims.
2. These early, general statements do *not* replace the regular commitment process: once essential claims are actually identified, a new declaration must be submitted specifically relating to these claims (possibly a blanket statement, if allowed by the SSO’s rules).

While the literal interpretation of the text on these forms/templates of a blanket disclosure implies that the submitter believes it owns essential IPR, we have been made aware that in practice, many participants submit blanket disclosures/commitments without performing any review of their patent portfolios. This allows them to reserve their rights to charge a royalty if they later realize that they own essential claims. Where this occurs, the distinction between early general disclosures and blanket disclosures/commitments becomes significantly blurred. The consequence of this behavior is a decrease in transparency into the actual existence of essential claims, because in the end it is not clear which parties actually believe that they own essential claims, and therefore which entities a prospective implementer of the standard may need to approach to obtain licenses.

6.1.3 Timing of commitments

In ITU/ISO/IEC, ETSI, and VITA, the timing of licensing declarations is linked to the timing of disclosures as discussed (see Section 5.3). In the organizations where suspected IPR holders receive a specific request to submit a licensing declaration, the timing of declarations is based on the receipt of such a request. Most organizations, however, also allow, encourage, or urge IPR holders to submit declarations without waiting for a request. VITA and NFC Forum have precisely defined times when licensing declarations must be received (in the former these are linked to the disclosure process.) Organizations with licensing-by-default rules have no specified timing, although they may have a variety of different ‘opt-out’ terms with associated timing requirements, as discussed in Section 6.1.9, below.

Excerpt of Table 11

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Timing of commitments (D2)	Participant: at time of disclosure (see § 5.3) Non-participant: upon request	As soon as reasonable possible Upon request {although request procedure not often used}	Member: at time of disclosure (see § 5.3) Also upon request	Upon request	Upon request {although request procedure not often used}	Arises on enrolling in specific Technical Committee	Early; 4 categories defined (linked to disclosure (see § 5.3))	n/a	n/a	Precisely specified for 4 categories of participation

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in **bold**, *italic* text refer to the corresponding section in the underlying analysis documents.

6.1.4 Beneficiaries of commitments

There are few surprises to be found in this regard, as in eight bodies commitments are required to benefit any implementer of the standard, whether that implementer is a member of the standards organization or not.

In IETF, the licensing agreement sought (through the request for license) is one that has all implementers as beneficiaries. An IETF representative has commented, though, that “*IETF does not require licensing commitments; licensing commitments are made voluntarily in IPR disclosures, then the scope of those commitments will be whatever scope the maker desires, as informed by applicable law.*” In the HDMI Forum, the beneficiaries are (only) the members of this forum or those who have signed a licensing agreement with the forum.

As earlier noted in Section 3.2, an evolving area of IPR policy drafting relates to the advisability of including a term expressly stating that members and/or all implementers are intended to be ‘third party beneficiaries’ of a licensing commitment. This term allows implementers to legally assert the commitment made by the owner of an essential claim in the event that that owner later brings a suit for infringement based solely on the sale of a compliant implementation of the standard in question and there is a dispute as to whether the patent holder acted in compliance with its RAND commitment.

Excerpt of Table 11

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Beneficiaries of commitments (D5)	Any implementer	Any implementer	Any implementer	Any implementer	Depends on commitment (25)	Any implementer	Any implementer	Any implementer	Members or licensees of HDMI Forum	Any implementer

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in **bold, italic** text refer to the corresponding section in the underlying analysis documents.

6.1.5 Geographic scope of commitment

While it might be logical to assume that any licensing commitment would be global in scope, and therefore apply equally to wherever compliant products or services are sold (or produced), not all policies are explicit in this respect (see below). This can be relevant because the authors are aware of cases in which an IPR holder later refused to grant licenses for patents with essential claims in certain areas of the world, arguing that the SSO in question had no authority outside of its ‘own’ world region.⁹⁷

Excerpt of Table 11

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Geographic scope of commitment (D11)	Worldwide	Worldwide	[Worldwide] (3)	Not specified	Not specified	Worldwide	Worldwide	Worldwide	Worldwide	Worldwide

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in **bold, italic** refer to the corresponding section in the underlying analysis documents.

Seven out of ten policies specify that commitments are made on a worldwide basis. This includes ETSI, although this SSO also allows a responding member to exclude a specific patent family member from its commitment. In ANSI and IETF, the geographic scope commitments are not specified in the policy.⁹⁸

6.1.6 Commitments (declarations) are irrevocable

Six out of ten policies explicitly specify that licensing commitments are irrevocable (see Table 11). ITU/ISO/IEC and VITA have commitments that are ‘upgradable’, meaning that commitments may be replaced at a later point in time, but only by commitments that are more favorable from the perspective of a licensee (e.g. from RAND to RAND-RF). For W3C, licensing commitments are irrevocable unless the relevant Recommendation is no longer in effect. In NFC, the NFC Forum Board of Directors may decide to release the obligation of the IPR owners to new licensees (but the IPR owner must continue to respect them for existing licensees).

⁹⁷ Interested readers are referred to ETSI document ETSI/B69(08)14, or www.radioresource-mag.com/onlyonline.cfm?OnlyOnlineID=67.

⁹⁸ An IETF representative clarified: “Depends on wording of commitment, if any.”

Excerpt of Table 11

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Commitments (declarations) are irrevocable (D14)	Yes (upgradable) (4)	Yes	Yes	Not specified	Not specified	Not specified	Yes (upgradable) (4)	Yes (5)	Yes	Yes (7)

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in **bold, italic** text refer to the corresponding section in the underlying analysis documents.

6.1.7 Irrevocability of licenses, and defensive suspension conditions

An irrevocable license is different from an irrevocable commitment. A license is an agreement with a specific party implementing the patented technology. In general, SSOs may want to prevent licenses being terminated (as compared to expiring) against the will of the licensee to the extent that the termination was a ruse for failing to sustain the original commitment to provide licenses to all implementers. ETSI explicitly states that licenses are irrevocable,⁹⁹ and in VITA and W3C this is in line with other aspects of the policy.

Excerpt of Table 11

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Licenses are irrevocable (except as permitted) (D14)	Not specified	Not specified	Yes (22)	Not specified	Not specified	Yes	[Yes]	[Yes]	n/a (6)	[Yes]
Defensive suspension condition (D14)	Not specified	Not specified	Not specified	Not specified	Not specified	Allowed	Allowed	Allowed	Not specified	Not specified

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in **bold, italic** text refer to the corresponding section in the underlying analysis documents.

Notwithstanding the above, OASIS, VITA and W3C add that defensive suspension is allowed (which is an exception to irrevocability of licenses). Such a condition allows the licensor to suspend the license if the licensee (first) sues them for infringement of one of their own patents on the same standards (see the text of the respective policies for the exact definitions used). It is the authors' belief that the general understanding among standards professionals is that license provisions providing for terminations for usual commercial reasons (e.g., failure to pay licensing fees) are not deemed to be inconsistent with a commitment to license on RAND terms.

⁹⁹ One expert that reviewed this report that is very knowledgeable about ETSI's policy noted: '*As I understand it, "irrevocable" in ETSI means that the license cannot be terminated by the patent holder for no reason. It does not mean that the license cannot be terminated for cause, such as for a failure to pay royalties or pursuant to a defensive suspension licensing term.*'

6.1.8 Licenses must be perpetual

Three organizations (OASIS, VITA and W3C) require licenses to be perpetual. This requirement seems to differ somewhat from usual business practices, where licensing agreements are entered into for an agreed period of time (e.g. 5 years) and therefore (unless otherwise subject to automatic renewal) open to re-negotiation thereafter. Having said this, W3C, a body that has the perpetual condition, requires RAND-RF. In this context, a perpetual license requirement makes somewhat more sense.

Excerpt of Table 11

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Licenses must be perpetual (D14)	Not specified	Not specified	Not specified	Not specified	Not specified	Yes	Yes	Yes	Not specified	Not specified

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in bold, italic refer to the corresponding section in the underlying analysis documents.

6.1.9 License withholding and opt-out options

While SSOs will typically want to ensure the availability of all necessary licenses to implement their standards, they usually recognize that it might be unreasonable or inappropriate to force a patent holder into licensing under certain circumstances. This can be of particular concern where the SSO is active in the technology area in which the ‘crown jewel’ patents of members can be found - those which give them their competitive edge in the marketplace. A frequently articulated fear is that a member’s competitors might conspire to deliberately draft a standard in such a way as to include the member’s essential IPR after that member has become bound by a mandatory licensing obligation. Another situation in which a firm may want to opt out is when it believes that a standard’s final text extends beyond what was implied in a working group charter.¹⁰⁰

As currently used in SSO circles, there is a distinction between withholding a commitment to license and exercising an ‘opt out option’. The former describes the third option in the traditional RAND-based SSO IPR policy (i.e., to state that the respondent does not agree to provide a RAND licensing commitment), as offered in the policies of Group 1, while the latter is generally used to refer to a provision found under a policy that includes mandatory or default licensing terms (i.e., Group 3 above), sometimes applicable to all members, but more typically on those that participate in a given Working Group.

Opt out mechanisms can operate in a variety of ways. For example, a licensing obligation may not attach until a member has participated in a Working Group for a time period allowing it to determine its level of interest (e.g., 60 days), or a participant may be able to drop out up to a

¹⁰⁰ An ‘opt out’ provision, for purposes of this study, is not the same as an allowed option to withhold a RAND license with respect to given essential claims where this right is provided in the ordinary course of participation.

certain point in time, but not later. In some SSOs, the consequences can be more severe (e.g., the member loses its membership, without a refund of its membership fees for the unexpired portion of the current membership year). As a generality, the severity of the penalty parallels the narrowness of the scope of work of an SSO. For example, SIGs are generally formed to develop a single standard, and members can therefore determine in advance their degree of interest in the SIG's goals, and the potential overlap of the eventual standard where their patent portfolio. In such a situation, there may be no opt out option at all (HDMI Forum provides an example). On the other hand, in an SSO with a broad remit, such as W3C or OASIS, a potential member may have great interest in some technical initiatives, and little or none in others. Currently, opt out provisions are uncommon in ANSI accredited SSOs due to uncertainty over the degree to which the terms (e.g., default or mandatory licensing) that would lead to the desirability of an opt-out provision would be consistent with accreditation requirements, although guidance may be in the offing on this topic.

Excerpt of Table 11

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Opt-out options (D7)	Licensing commitment template has option for 'no license'	Licensing commitment template has option for 'no license'	Licensing commitment template has option for 'no license'	Silent (8)	IPR Disclosure template has option for 'no license'	A specific procedure is available (see text)	{Available} (9)	A specific procedure is available (see text)	None (10)	Yes, via a specific procedure, except for submitters

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As previously noted, OASIS licensing commitments arise from participation and/or contribution in individual TCs, each of which has a specified licensing mode. There is a specific procedure available for opt-out, however, allowing a member to withdraw from the relevant Technical Committee within seven days after approval of a standard (by ballot). If seven days pass without any withdrawals, all OASIS members are assured that all TC participants have become bound by their licensing commitments. Similarly, W3C has a licensing-by-default policy and a detailed procedure for opt-out. W3C allows parties to continue to be participants, provided that they disclose the patents with essential claims they intend to withhold. Finally, the NFC Forum has a detailed opt-out procedure, which is available for participants, non-participants, and new members (unlike most SSOs, new members of NFC Forum incur licensing obligations with respect to standards already adopted by the SSO). NFC Forum members cannot, however, opt-out of their obligation to license patents with essential claims under their own voluntary submissions.

The IPR policy of W3C, a 'Group 3' SSO, includes a specific opt out mechanism that was agreed upon after strenuous negotiations among the many member legal representatives involved in the creation of that policy. Unlike other policies, the W3C links the opt out option to policy terms permitting reciprocity of licensing restrictions in order to provide a disincentive to (or partial work around to the effects of) to opting out. Accordingly, a participant that exercises its opt out rights in full compliance with the W3C policy, and acting in full compliance with the policy, may

find that it no longer has access to the essential claims of other members when they invoke their right to include reciprocity in their license conditions relating to the same standard.¹⁰¹ This possibility was confirmed by a W3C representative, who stated: *“Because a patent commitment may be conditioned on a reciprocal RF license, a contributor unwilling to license RF might find himself unable to get a license to implement.”* The representative was not aware whether such situations have arisen in practice; perhaps an example of a situation where lawyers have gone to the wall to embed a right which their clients never in fact exercise, but it is also possible that this never happened because members fear this consequence of opting out.

6.1.10 Reciprocity condition

IPR holders that commit themselves to RAND (or other) licensing conditions may be concerned that at some point they could face a situation where they are obliged to grant a license to a firm that refuses to license its own essential IPR back under similar conditions. To prevent this, firms might want to include a condition of reciprocity in the licenses they grant. In the context of this study, there are two forms of reciprocity:

- Bilateral reciprocity means that the licensee must offer its own essential claims under the same standard on the same conditions (e.g. RAND or RAND-RF) to the licensee (but not necessarily to other members or implementers).
- Universal reciprocity, meaning that the licensee must also offer its essential claims IPR for the same standard on the same conditions (e.g. RAND or RAND-RF) to all implementers.¹⁰²

Notice that universal reciprocity automatically includes the requirement of bilateral reciprocity.

¹⁰¹ The same situation could occur for (1) a member for which, in an exception handling, it has been decided that an essential patent holder is allowed to require a RAND fee or (2) is a non-member that is not willing to license at RF terms.

¹⁰² Note that the language of some policies is not sufficiently clear to indicate whether only simple bilateral, only universal, or both forms of reciprocity would be permissible. See for instance the definition supplied in the ITU/ISO/IEC policies: *‘The word “Reciprocity” means that the Patent Holder shall only be required to license any prospective licensee if such prospective licensee will commit to license its Patent(s) for implementation of the relevant ITU-T/ITU-R Recommendation Free of Charge or under reasonable terms and conditions.’*

Excerpt of Table 11

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Reciprocity condition (D8)	Bilateral RAND reciprocity allowed	Not specified	[Bilateral] RAND reciprocity allowed	Not specified	[Allowed]	Universal reciprocity allowed	Bilateral RAND reciprocity allowed	Universal reciprocity allowed	Automatic bilateral reciprocity	Reciprocity is specified between licensor and licensee
	Bilateral RAND-RF reciprocity allowed (11)									Bilateral RAND-RF reciprocity allowed (11)

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in bold, italic refer to the corresponding section in the underlying analysis documents.

The table above provides an overview of all the policies in this respect. We summarize the most important aspects:

- ITU/ISO/IEC, ETSI and VITA allow bilateral reciprocity conditions;
- In HDMI Forum and NFC Forum, bilateral reciprocity is automatically the case;
- OASIS and W3C allow universal reciprocity conditions;
- ITU/ISO/IEC and NFC Forum have interesting additional elements. Those that chose to commit to RAND-RF can opt for the freedom to nevertheless charge RAND royalties to those licensees who commit themselves only to royalty bearing RAND terms. This may sound cryptic, but in easier language it would sound like: *'you can use my essential IPR for free, as long as I can use your essential IPR for free as well. Otherwise I'll charge you [... reasonable royalties if you want to charge me reasonable royalties].'* NFC Forum's approach may be regarded as innovative, because it seeks to balance the attainment of the organization's overall goals with the rights of IPR holders to monetize their IPR, if they really want to.

The concept of reciprocity is so pervasive that it should not be automatically concluded that an SSO that is silent on the topic deliberately meant to exclude reciprocity from its definition of RAND. Indeed, the authors are of the opposite opinion: that the reasonableness of an appropriately drafted reciprocity provision is so widely acknowledged that it is not necessary for an IPR policy to explicitly state that it is consistent with a RAND obligation. From this perspective, the reason for an IPR policy to address reciprocity would primarily be important if an SSO wished to clarify that a more restrictive reciprocity provision (such as the NFC Forum variation discussed below) than the basic form would be agreed to be permissible.

That said, for bodies where the possible use of reciprocity conditions in licensing agreements is not clearly addressed in the policy (IEEE and ANSI), it would fall to a judge or other appropriate authority to determine whether a certain form of reciprocity requirement (or any requirement at all) would or would not meet the more general requirements of 'reasonable and non-discriminatory' that these policies impose.

6.1.11 Other conditions allowed

Some policies provide additional detail or rules relating to what other conditions are or are not considered to be consistent with a RAND licensing obligation, either noting specific conditions are permissible, or that additional appropriate conditions can be added. Again, a table provides an overview of all the policies in this respect.

Excerpt of Table 11

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Other conditions allowed in commitment (D8)	No other conditions allowed (13)	Not addressed	[No other conditions allowed]	Not specified	Allowed and can be listed in licensing commitment	Depends on licensing mode of TC in question (14)	Various	Only some permitted as well as certain customary licensing terms (12)	Not specified	Not specified

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in **bold**, *italic* refer to the corresponding section in the underlying analysis documents.

6.1.12 Inclusion of sample licensing contract

Some bodies allow or even encourage providing a sample contract along with the licensing commitment, as part of their own processes (see table). VITA has an interesting policy element consistent with its (thus far) unique mandatory *ex ante* licensing terms disclosure requirement, encouraging the owners of patents with essential claims to include a sample contract with all material licensing conditions with their licensing statement (see below). This may include a variety of additional conditions, as long as they are seen to be reasonable and non-discriminatory. However, if a respondent decides not to include a sample contract, it can only use those licensing conditions that are part of VITA's 'model' provisions (which are still quite extensive and include alternative provisions such as a grant-back, reciprocal license, a non-assert provision, and a defensive suspension provision). To date, all VITA licensing disclosures have included a sample license agreement, so the parameters of this provision have not yet been tested or interpreted.

Excerpt of Table 11

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Inclusion of sample licensing contract (as part of SSO process) (D8)	Not allowed (28)	Possible	(21)	Not specified	[Possible to list all relevant conditions]	Not specified	Encouraged (penalty for those that don't, see § 6.1.13)	Not specified	Not specified	Not specified

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in **bold**, *italic* text refer to the corresponding section in the underlying analysis documents.

6.1.13 Restricted to use, necessary to comply to standard

Participants in SSOs understandably wish to be clear that their commitments to license do not extend beyond implementing the standard in question. This might be an issue, for instance, in video coding technologies, where many technologies share the same basics. Virtually all IPR policies cover this aspect by making clear that any RAND/RAND-RF or other commitments are only for the purpose of implementing the standard in question. Some policies go further, and allow a standard to include ‘scope of use’ terms that allow restrict licensing obligations to those implementations that are intended for use within the parameters laid down in the standard. An example of the impact of such concerns is reflected in this comment from one SSO representative: “It may be useful to note that some read this to conclude that an implementation which falls out of compliance with a standard's conformance requirements also falls out of the protection of these license grants.”

Excerpt of Table 11

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Restricted to use necessary to comply to standard (D12)	Yes	[Yes] (15)	Yes	Yes	{Depends on commitment} (27)	Yes	Yes	Yes	Yes	Yes

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. Accolade brackets { } indicate that is not defined in the policy but it was clarified as such by a representative of the SDO. For the numbered notes, see Annex 1. Indications in **bold, italic** text refer to the corresponding section in the underlying analysis documents.

6.1.14 Which essential claims/patents are covered by commitment

If a company is subject to a licensing commitment, which specific IPR should be subject to that commitment? We have previously addressed whether a commitment extends to a patent, or only to essential claims under a patent. However, are there examples of SSOs where a broader obligation is imposed? Once again, IPR policies address this question in a variety of ways.

In six of the ten policies, the commitment covers any essential claims under the specific standard in question, regardless of whether these patents were actually disclosed by their owner or not (see Table 11). In two policies the commitment covers only the disclosed essential claims. In IEEE, for instance, the declaring party can choose between either, by selecting the appropriate box in the template.

Excerpt of Table 11

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Which essential claims/ patents are covered by commitment (D9)	Any patent for specified standard	Can be chosen by submitter: Any patent claims for specified standard, or claims in specified patents only	Specified patents only In case of GL: All patents for project (24)	Not specified	Specified patent claims only	Participant: any essential claims for specified standard Contributor: essential claims in contribution only	Any patents with essential claims on specified standard	Any patents with essential claims for specified standard, inclusive future patent claims (unless there is a proper exclusion)	Any necessary claims for specified standard	Any necessary claims under Standards as developed For new members: Any necessary claims under existing NFC Forum standards

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in **bold**, *italic* text refer to the corresponding section in the underlying analysis documents.

At OASIS, obligations depend on the capacity of the IPR holder. If its licensing commitment arises out of participation, then it applies to all of its patents with essential claims under the specified standard. If its commitment arises due its status as a non-participating contributor, it covers only those patent claims owned by it that are essential under its contribution. (Although most contributors will also be participants, the OASIS policy recognizes that this will not always be the case, and provides specific submission forms for use in this situation.) Many SSOs provide for such contingencies, and for the presence of invited guests, by means external to their IPR policies (e.g., by requiring that non-member participants and contributor sign specific undertakings).

6.1.15 Commitment involves legal restrictions

None of the policies we examined imposes any restrictions on what legal remedies a member or the intended beneficiary of a licensing commitment may pursue in court. We nevertheless mention this element in our analysis because such remedies have recently become a matter of concern. It has been argued by some that when a RAND commitment exists that only the economic terms of a license remain as the subject for a legal dispute. This is significant, because under the laws of some jurisdictions, an injunction against the sale of goods will not be awarded by a court if the party alleging dispute can be adequately compensated by a monetary award if it prevails in court. Opponents argue, however, that injunctive relief is one of the key things an IPR owner should be entitled to seek if its patents are infringed. The answer to this question can have immense commercial significance, and that significance can be greatly magnified where every vendor has no choice but to implement a standard that necessarily results in the infringement of the patent claims in question. In June 2012, the US Senate Committee on the Judiciary organized

a hearing on this issue,¹⁰³ and competition authorities in both the U.S. and in Europe are likely to continue to take an active interest in this issue.

This topic has now been taken up within standards bodies (including recent meetings of the ETSI IPR Special Committee) and we will certainly hear more about it. One possibility is that one or more SSOs may seek to stipulate that injunctions either would, or would not, be available to member owners of patents with essential claims where applicable law would permit such an injunction to be sought. Another possibility is that members would not be willing to tie their hands in this fashion.

Excerpt of Table 11

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Commitment involves legal restrictions in infringement cases (D13)	Not specified	Not specified	Not specified but discussed	Not specified	Not specified	Not specified	Not specified	Not specified	Not specified	Not specified

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. For the numbered notes, see Annex 1. Indications in bold, italic refer to the corresponding section in the underlying analysis documents.

Related to the above, several policies examined (including that of IEEE) explicitly state on their IPR declaration forms that the submission of the form does not imply that the form itself creates a license. (If the latter were true, it would be entirely impossible for a patent owner to start an infringement case since there would already be a license in place with any implementer.) The only cases where the policy provides for the creation of a direct ‘right’ among implementers to use patented technology arises when a member elects to make a non-assertion covenant, where this option is provided under a policy (like that of OASIS). Likewise, many voluntary IETF declarations take the form of covenants not to assert, which by their nature are intended to be self-executing. Many of these declarations explicitly state that they are subject to terms such as defensive suspension.

6.1.16 Are all commitments made public?

The main findings are again in the table shown below. They mirror to a large extent those on the public availability of disclosure records discussed in Section 5.4.5 and summarized in Table 9. Virtually all SSOs make commitments public, except VITA. VITA commitments are, however, available to VITA members, and they are made available to implementers of a VITA standard upon request.¹⁰⁴ Disclosures (including licensing commitments) concerning VITA standards that

¹⁰³ US Senate Committee hearing entitled “Oversight of the Impact on Competition of Exclusion Orders to Enforce Standard-Essential Patents”, held on July 11, 2012, in the Dirksen Senate Office Building.
www.judiciary.senate.gov/hearings/hearing.cfm?id=45dca2a38e7309da19dce3a4cc06b817.

¹⁰⁴ See the Supplement report for detailed information.

have been submitted to ANSI for adoption as American National Standards (ANS) are made public by ANSI.

In NFC Forum, the ‘Member IPR election forms’ are not made available to the general public. All IPR election forms are made available to members via a secure members Website.

Where members or participants are not required to make elections among licensing alternatives (e.g., OASIS, W3C and HDMI Forum), there are no licensing statements to make public. Still, W3C, among others, does offer web pages that show which parties are committed in this way (see Note 30 of Table 10 for details).

Excerpt of Table 11

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Are all commitments made public? (D18)	Yes	Yes (16)	Yes (upgraded)	Yes (at ANSI and possibly also at the SSO)	Yes	n/a	No (yes for ANS) (29)	n/a (30)	n/a	{No} (17)

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such. Accolade brackets { } indicate that is not defined in the policy but it was clarified as such by a representative of the SDO. For the numbered notes, see Annex 1. Indications in bold, italic refer to the corresponding section in the underlying analysis documents.

6.2 Specified and sought licensing modes or covenants

In the introduction to this paper, we introduced the terms RAND and RAND-RF. However, other variations can exist within a given IPR policy, including those within the study set. For example, OASIS has more than one royalty free licensing mode, and refers to ‘RF on restricted terms’, meaning that licenses can only be granted on specific RF terms specified as such by OASIS. Similarly, several IPR policies expressly provide an alternate to actual licensing, under which the owner of an essential claim commits not to enforce those claims. This option is often referred to as non-assertion, and the term, when found in an IPR policy is usually referred to as a ‘non-assert provision’ or a ‘covenant not to sue’.¹⁰⁵ IPR policies may also allow a participant to withhold a license entirely, and to state that it does not believe that it owns essential claims. (This statement is usually only found in policies in which disclosure may come from parties other than the patent owner, and the SSO then contacts the patent owner in order to determine whether this party is willing to provide licensing assurances.)

Despite the fact that the concept of RAND terms is central to many IPR policies, it is remarkable that none of the policies in the study set provides a definition, or any guidance on how abstract concepts as ‘reasonable’ or ‘non-discriminatory’ are to be understood. The same holds true with respect to the word ‘fair’ in policies that speak of FRAND, or even what, if anything, is intended

¹⁰⁵ Note that this is not necessarily a waiver. There often are FRAND terms associated with non-asserts, including field-of-use and defensive suspension – so enforcement may happen under certain circumstances.

by adding the word fair in addition to the word ‘reasonable’. Suffice it say that if any differentiation was ever intended (which is doubtful), that wisdom has been lost in the sands of time.

Table 13 presents an overview of licensing and non-assertion options specified in the policies noted. By *specified*, we mean that the particular licensing option is listed and defined in the policy. As can be seen, many policies offer multiple options either within a Working Group or (in the case of OASIS) to be specified in the charter for a Working Group. In the former case, a submitter may have only a single option, even where participants are given two or more. If a policy defines RAND, a patent holder willing to license Royalty Free is of course free to do so and to provide licenses at no cost¹⁰⁶, or simply not to assert any of its patents with essential claims against an implementer. But this fact would not be visible from the commitment as such (unless the submitter added an additional note explaining so). The obligation of providing non-discriminatory terms, however, should result in the patent owner providing similarly advantageous terms to all implementers.

Table 13: Licensing or non-assertion modes explicitly specified in the policy (D6)

	ITU/ISO/I EC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
RAND (may be royalty bearing)	+	+	+	+	+	+	+			+
RAND-RF (also called RAND-z or RAND-zero)	+	+		+	+	+				+
RF at terms defined in the policy (e.g. ‘RAND at restricted terms’)						+		+		
Non-assertion		+			+	+	+		+	

Legend: ‘+’ means that this is explicitly defined as a licensing mode in the policy

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such.

For the numbered notes, see Annex 1. Indications in **bold, italic** text refer to the corresponding section in the underlying analysis documents.

There is an interesting relation between these licensing modes and the open source community. Even the most permissive RAND-RF commitment modes have at times created tension with some members of the open source community. In this regard, it is important to note that with respect to the most restrictive licenses (e.g., the GNU General Public License, or GPL), it is as important to be aware of what open source proponents assert as to what a court may eventually legally determine. Accordingly, where recruiting ‘community’ participation to assist in the development of a given piece of software is a goal, it is important to be mindful of what that community believes. From this perspective, while some legal commentators take the position that royalty or other licensing fee requirements are not *per se* incompatible with the terms of even the GPL, this position would not be endorsed by a significant percentage of open source programmers. Other terms commonly considered to be consistent with a RAND commitment would run afoul of

¹⁰⁶ Many patent owners still require licenses even if they don’t charge, which can still be a burdensome requirement from the perspective of the licensees, especially where multiple patent owners elect to do so. Still, under a RAND or RAND-RF requirement patent holders are allowed to do so.

licenses such as the GPL by anyone’s legal analysis. For this reason, a few SSOs (such as OASIS) have gone out of their way to define licensing options that are explicitly tailored to enable implementation in even the most restrictive open source licenses.

Table 14: Minimum and differential licensing modes that are sought

	ITU/ISO/I EC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Minimum licensing mode sought (D6)	RAND	RAND	RAND	RAND	None (1) RAND-RF (2)	RAND	RAND	RF at terms defined in the policy	Non- assertion	RAND
Different standards can have different minimum licensing requirement (D3)	No	No	No	Left to the accredit- ed SSO	[Yes] (1)	Yes	No	No	No	No

For the numbered notes, see Annex 1. Indications in **bold, italic** text refer to the corresponding section in the underlying analysis documents. Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such.

In most SSOs, the minimal sought licensing commitment is RAND. If the SSO becomes aware that one or more essential claims are not available on these terms, it will typically either attempt to either obtain such a commitment or ‘design around’ the unavailable claims, failing which it may halt the development of the standard entirely (assuming there is consensus among the decision makers that the withheld claims are both essential as well as validly issued – which will not always be the case). A few SSOs may consider offering the owner of the essential claims the choice of committing to another other licensing modes (e.g., by making an exception to their own baseline rules). Below we discuss specific examples to be found within the policies of the study set:

- W3C strongly prefers Royalty Free commitments, including non-assertion covenants.
- The HDMI Forum imposes non-assertion commitments on its members, and does not offer an opt out mechanism.
- At OASIS, each TC can choose its own ‘licensing mode’ from a list of four increasingly restrictive rule sets, the last of which is intended to facilitate not only free implementation, but implementation in software licensed under restrictive as well as permissive open source software licenses. Each mode defines the specific level of commitment required by the owners of essential claims. The licensing mode is part of the proposal to start a TC and is formalized in the charter for the TC. This charter cannot be changed at a later date. Should parties wish to change the mode selected in mid-stream, they must agree to dismantle the existing TC and propose to form another one using another licensing mode.
- When the OASIS IPR Policy, which until then had been a traditional RAND policy, was amended to add a royalty free mode, the SSO was unexpectedly subjected to criticism by some open source software advocates because it had created an alternative mode to, rather

than replacing, its RAND free mode. Indeed, in a remarkable display of the adage that no good deed goes unpunished, some 28 open source advocates signed a petition calling upon a boycott of all OASIS standards. When we now look at the actual selections made thereafter by OASIS committees, the anger of these critics proved to be premature: of all 83 currently active TCs, not a single one selected royalty bearing RAND.^{107, 108} Moreover, out of all 83 TCs, only 14 have actually received one or more notifications relating to essential claims, including those stating that the respondent did not own any such claims. TCs that did receive notifications usually received only one or very few, although one committee received notifications from 11 members. Interestingly, an OASIS representative reviewing this table added: *“Also, there have been one or two committees historically that elected RAND mode; however, they eventually transitioned to a successor royalty-free project. We think it is interesting data that, in the mode election ‘marketplace’, our members have chosen to avoid the royalty-bearing mode.”*

Table 15: Overview of licensing modes selected by OASIS committees (per June 2012)

	RAND	RF on RAND	RF on limited terms	Non-assertion
Total of active committees with this model	0	16	60	6
Ibid, for which one or more notification is present	0	5	9	0

Note: the mode of one committee (‘Web Site Upgrade’) could not be determined because its web page was missing.

Uniquely, in IETF a working group does not *a priori* decide on a minimum licensing requirement. IETF working groups have the discretion to *‘adopt technology with a commitment of fair and non-discriminatory terms, or even with no licensing commitment, if they feel that this technology is superior enough to alternatives with fewer IPR claims or free licensing to outweigh the potential cost of the licenses.’*¹⁰⁹ In other words, if a working group becomes aware that certain essential claims will not be available except under certain conditions, it can – on a case by case basis – consider whether to continue to incorporate the technology covered by those claims. For what are considered to be ‘security standards’, however, we have been told that there is ‘a consensus’ within IETF that RAND-RF is the minimum level. The fact that IETF working groups may even decide to adopt technologies with no licensing commitment may come as a surprise to some, considering that IETF is an organization that is generally perceived to be critical of adopting standards that cover essential IPR. The strong preference at IETF for RF standards is evidenced by actual RF and non-assertion covenants made in voluntary IETF disclosures, which,

¹⁰⁷ Further reflecting on the size of the tempest within the teapot, the authors are unaware of any standard adopted by OASIS prior to the amendment of its policy in connection with which a member required a fee-bearing license.

¹⁰⁸ Whether not the petition influenced the choices later made by any individual Technical Committee meetings is impossible to determine.

¹⁰⁹ RFC 3979, at §8. Unlike most SSOs (which are formed by business personnel with the advice of lawyers) the IETF arose from the collaboration of an ever growing number of engineers, unrestricted by suits and attorneys. Its IPR policy is reflective of this legacy.

between 2007-2010, represented a full 59% of all patent disclosures and 76% of all disclosures of licensing terms.¹¹⁰

6.3 Transfer of patents encumbered with licensing obligations

As noted earlier, a topic that has received considerable attention in recent years relates to the transfer of patents with essential claims subject to licensing or non-assertion obligations. Relevant questions are:

1. If patents with essential claims change ownership, do licensing obligations travel along? (In other words: is the new owner bound to the same licensing obligations?)
2. If an SSO supports multiple levels of obligations (RAND, RAND-RF, non-assert), does the same level of licensing obligations travel along if the obligation selected by the transferor was more restricted than the minimum permitted at the time?
3. What happens in the case of successive (cascade) ownership changes?
4. Are the SSO and/or other parties entitled to be notified of ownership transfer?
5. If a patent owner transfers a claim without informing the transferee that this claim is encumbered by a licensing commitment, does the patent owner incur any liability to someone sued by the transferee for infringement?

This section discusses what the policies in the study set specify in this respect, while Section 7.7 addresses these issues in more detail with respect to patent transfers.

Table 16: Provisions on patent transfer

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Policy clauses on transfer of encumbered patents (D15)	Obligations must be transferred	[exact meaning unclear]	Notification requirement	Not specified	Not specified	Only mentioned in the context of bankruptcy	Obligations transfer	None (only full firm acquisition addressed)	Obligations must be transferred	None

Square brackets [] indicate this is not explicitly stated in the policy but was interpreted by us as such.

Below we discuss the policy clauses on patent transfer in more detail:

- The ITU/ISO/IEC common policy has a strong section on patent transfer, defining obligations for the original patent holder. Essentially, a patent holder that has entered into a licensing commitment must ensure that the transferee also is bound to the same commitment (e.g., to license free of charge and not on a RAND basis if the transferor had committed to free licensing). Despite the clear intention of ITU/ISO/IEC to have a strong set of rules on

¹¹⁰ Contreras (NIST 2011) Contreras, J. (2011). An Empirical Study of the Effects of Ex Ante Licensing Disclosure Policies on the Development of Voluntary Technical Standards. National Institute of Standards and Technology (NIST). See especially page 25 (Table A.1).

patent transfer, we still observe areas where potential concerns could arise: (1) there is some ambiguity about whether *all* parties that submitted a licensing declaration have this obligation, or *only those* that were actually participating in the drafting of the standard;¹¹¹ (2) when a new owner acquires a full portfolio of patents from a party that originally filed a blanket disclosure, it can remain unclear which of these patents is encumbered by licensing obligations (in this case, the ITU/ISO/IEC policy speaks of ‘reasonable efforts’), and (3) if a new owner is not an ITU/ISO/IEC participant, the licensing obligations would not transfer along in the case of a second, successive transfer.¹¹² This is relevant because such successive (cascading) ownership changes of patents are not unusual and could even be exploited in this context.

- The IEEE policy includes a specific section on patent transfer. However, with all of the AND and OR conditions included, an accurate reading requires the application of a fair degree of Boolean algebra, leading the authors to lack confidence in whether they have interpreted these rules accurately with respect to all situations, and with respect to any duty of notification. IEEE was not available for clarification.
- At ETSI, if a member assigns or transfers ownership of an essential IPR that it has disclosed, the member is required to exercise reasonable efforts to *notify* the owner of any licensing commitment it has made. Note that only the new owner needs to be informed, and not ETSI. The policy does not specify that the old owner must ensure that the new owner will assume the existing commitment. ETSI notes that some legal jurisdiction may specify that commitments automatically transfer to the new owner. However, others may not, resulting in different situations in different jurisdiction. The patent transfer rules are currently being revised at ETSI.
- OASIS clauses related to ownership changes refer to bankruptcy/insolvency situations only. An OASIS representative clarified: *“Outside of insolvency proceedings, the policy relies on existing law regarding the degree to which a patent, subject to an encumbrance, continues to be burdened by that encumbrance after its transfer.”* Nevertheless, for the case of bankruptcy, they take an innovative approach: in order to ensure that after bankruptcy patents with essential claims would still be encumbered by a licensing obligation the policy specifies that *“Solely¹¹³ for purposes of Section 365(n) of Title 11, United States Bankruptcy Code, and any equivalent law in any foreign jurisdiction, the [licensing obligations made in OASIS] will be treated as if they were a license and any OASIS Party or third-party may elect to retain its rights under this promise if Obligated Party, as a debtor in possession, or a bankruptcy trustee in a case under the United States Bankruptcy Code, rejects any obligations stated in Section 10.”*

¹¹¹ Please refer to the supplement documents for a more in-depth discussion on this. Interestingly, two of these organizations offered different interpretations in response to the same question.

¹¹² This view was confirmed by an ISO/IEC representative. See the Supplement reports for further more details.

¹¹³ This first phrase is important, otherwise OASIS would imply that a licensing commitment is a license as such and would have all types of unintended consequences for patent litigation.

- In VITA, the general licensing obligation defined in the IPR policy explicitly provides that ‘transferees’ of patents are to be bound. However, the IPR policy does not provide details on how this obligation is to be satisfied by a member making a transfer.
- In W3C there are no specific provisions on patent transfer as such. There is, however, a statement in a FAQ that in the case of the acquisition of an entity that is subject to licensing obligations, the obligations will continue to exist. In support of this statement, the FAQ refers to a clause in the W3C policy that specifies that commitments are made ‘*for the life of the patents in question*’. The policy does not provide details on how this obligation is to be satisfied by a member making a transfer.
- HDMI Forum, which has a rather recent IPR policy, includes a short but concise clause on patent transfer. When transferring patent claims encumbered by a covenant not to assert (the mode provided for under the HDMI documentation), the owner must ensure that the new owner is also bound to the same licensing commitment. It is not clear whether the commitment will apply across cascading ownership transfers, because the new owner might not be an HDMI Forum member (in that case, it needs to respect the non-assert mode itself but is arguably not obliged to ensure a successive owner is also bound). HDMI Forum additionally specifies that members are not allowed to intentionally transfer patents with essential claims (e.g., in advance of an obligation coming into existence) in order to circumvent having to enter licensing obligations (this term can often be found in the IPR policies of other SSOs as well, and particularly those with strict requirements).

Finally, ANSI, IETF and NFC Forum have no provisions concerning patent transfer at all, reflecting perhaps the amount of time since their respective policies were last amended and/or the difficulty of achieving consensus on specific changes. Note that any encumbrances for the new owner have a negative impact on the price at which patents might be sold, and parties that may consider future sale or transfers (as well as curators!) might not like that.

We also observe that none of the policies specifies that the SSO or other parties need to be notified of ownership changes. While such changes may become visible to other stakeholders if the new owner submits a licensing declaration, this will certainly not always be the case. Also patent offices generally do not provide full mechanisms that make any patent ownership change visible: in many countries, some but not all ownership changes must be reported to the patent office.

6.4 Ex-ante disclosure of most restrictive licensing fees

The so-called *ex ante* disclosure of most restrictive licensing fees, often simply referred to as ‘*ex ante*’, refers to a situation where a patent owner, at an early stage in the standards development process, makes binding commitments on the maximum royalty fee or other conditions it is going

to use in licensing contracts.¹¹⁴ In principle, such information (if available in time and, where relevant, available for all different technological alternatives) could help to inform decisions on whether or not to include patented technology in standard. It can also help implementers in terms of their licensing negotiations, as an upper bound is known (unless this upper bound is set so high that it becomes uninformative). It could also create an incentive for IPR holders to restrain their licensing demands, knowing that a lower price can increase the likelihood that their technology will be included in the standard – if not included, there will not be any licensing revenue at all. At the same time, opponents have argued that these ‘ideal’ advantages are not realized in real life, practical situations, and that there are various reasons for IPR holders not to be willing to state an ex-ante disclosure of most restrictive licensing fees. All in all, the ex-ante disclosure of most restrictive licensing fees has been subject to long discussions, with marked proponents and opponents.¹¹⁵

Note that this section is about ex-ante disclosure of *most restrictive* licensing fees. This means that once such commitments were made patent owners cannot raise their fees above this level, but they may actually ask lower prices, or lower their prices over time (the latter does raise the issue of non-discrimination between early and late licensors, and possible rebates to those that licensed at a higher price originally). This also means that patent owners can also quote (much) higher fees than they actually intend to demand, which would result in information that is not useful to the process.

Table 17: Ex-ante disclosure of most restrictive licensing fees (as part of an SSO process)

	ITU/ISO/IEC	IEEE	ETSI	ANSI	IETF	OASIS	VITA	W3C	HDMI Forum	NFC Forum
Ex-ante information on most restrictive licensing terms (D16)	Not specified	Voluntary; part of declaration	“Not prohibited”; ETSI acts only as repository	Not specified	[Not specified] (1)	Not specified	Obligatory	Not specified	n/a (2)	Not specified

For the numbered notes, see Annex 1. Indications in bold, italic refer to the corresponding section in the underlying analysis documents.

The table above discusses ex-ante disclosure of most restrictive licensing fees *as part of any SSO process*. We stress this because outside an SSO, any patent owner is free to make a public statement what the maximum fee he is going to charge for any patent.

¹¹⁴ When used in this context, the term *ex ante* refers to the period before the standard has been finalized. This is closely related to, but not the same as, the meaning of the term *ex ante* when used by economists describing the hold up problem. In models of hold up, the term refers to the period before irreversible investments in implementation raise the costs of switching to an alternative technology, thereby increasing the leverage of an essential patent holder in license negotiations.

¹¹⁵ For a more elaborate discussion on ex-ante, see Blind, K., Bekkers, R., Dietrich, Y., Iversen, E., Köhler, F., Müller, B. et al. (2011). Study on the Interplay between Standards and Intellectual Property Rights (IPRs). Final Report. Study commissioned by the European Commission Tender No ENTR/09/015 (OJEU S136 of 18/07/2009). Brussels: European Commission. Retrieved from http://ec.europa.eu/enterprise/policies/european-standards/standardisation-policy/policy-activities/intellectual-property-rights/index_en.htm.

VITA is especially known for its mandatory ex-ante policy. Its members are obliged to declare the maximum royalty rate for their patents with essential claims, as part of its licensing declaration. If a member fails to do so, it has to license its patents on a royalty free basis.¹¹⁶ There have been many discussions of the VITA policy, and in 2001, the National Institute of Standards and Technology (NIST) commissioned a study of the impact of this element in VITA's policy.¹¹⁷

Following VITA, IEEE was the first large SSO that included the voluntary ex-ante disclosure of most restrictive licensing fees. In 2007, the IEEE received a positive Business Review Letter from the US Department of Justice,¹¹⁸ which essentially gives them the green light to adopt such a policy. This move attracted a lot of attention from industry watchers.¹¹⁹ The policy explicitly gives parties that issue a LoA an option to provide (i) a not-to-exceed license fee or rate commitment, (ii) a sample license agreement, or (iii) one or more material licensing terms. The IEEE policy confirms that the relative costs of different technical approaches – including licensing fees of patents with essential claims – may be discussed and may impact the decisions taken. As explained above, IPR holders have the option to inform IEEE about the maximum or actual fees they would be charging. Also, the publicly available declarations at IEEE clearly show which patents will be available at RAND-RF, and which patents may only be available at a royalty-bearing basis. As expressed by IEEE: “*The more information the better when selecting between proposals*”.¹²⁰ At the same time, IEEE provides appropriate safeguards to ensure discussions in working groups do not lead to antitrust concerns. One may not coerce a licensing holder that has chosen not to provide information about fees, and also the price at which a compliant product would be sold as well as specific disclosed licensing terms may not be discussed.

ETSI has a ‘light’ procedure regarding voluntary ex-ante disclosure of most restrictive licensing fees. Being part of an ongoing discussion, it had been argued by some that such a (voluntary) element in the IPR policy might not be compatible with EU competition rules. The European Commission, however, confirmed that there was no reason to believe that a voluntary approach would be incompatible. Also, even without such a policy, any party has always been free to make a statement about the fee it is going to ask for its IPR, for instance on a web page of its own web site, or in a press release. In response to the discussion, ETSI now indicates in its policy that voluntary ex-ante disclosure of most restrictive licensing is ‘not prohibited’¹²¹, but does not

¹¹⁶ VITA also encourages members to submit a sample contract with all other material licensing conditions, if it chooses not to do so the member can only use those licensing conditions that are part of a VITA ‘model’ provisions.

¹¹⁷ Contreras, J. (2011). An Empirical Study of the Effects of Ex Ante Licensing Disclosure Policies on the Development of Voluntary Technical Standards. National Institute of Standards and Technology (NIST).

¹¹⁸ Department of Justice (2007). Response to Institute of Electrical and Electronics Engineers, Inc.'s Request for Business Review Letter. Washington, DC: DoJ.

¹¹⁹ See Greenfield, L. & Gil Ohana (2007). Department of Justice issues notable business review letter concerning leading standards development organization's IPR policy. Wilmerhale news alerts, May 10, 2007; Luna, L. (2007). Reality game. Mobile Radio Technology, January 2007.

¹²⁰ IEEE Patent Tutorial, page 8.

¹²¹ ITSI IPR Guide at §4.5: “[...] voluntary, unilateral, public, ex ante disclosures of licensing terms by licensors of Essential IPRs, for the sole purpose of assisting members in making informed (unilateral and independent) decisions in relation to whether solutions

endorse or recommend its use, or comment that it would be desired to use such information – if available – to inform choices in the standardization process. If parties wish to use ex-ante disclosure, ETSI will work as a repository that contains information on where and how the licensing conditions for this ex-ante disclosure can be found. The ETSI website contains a section for such references, but to date does this list is still completely empty.

While IETF has no specific ex-ante procedure in place, it does allow companies to disclose specific licensing terms, and a representative of this body has pointed out that many companies voluntarily disclose such conditions, and in many cases these companies offer royalty free terms.¹²²

In the other organizations, the policy does not specify anything in terms of ex-ante disclosure of most restrictive licensing fees, although a patent holder is by definition free to make statements about such fees on its own initiative, outside of the SSO setting. Note also that for W3C and the HDMI Forum, the ex-ante element is not relevant because the minimum licensing commitment is royalty free.

6.5 Link to patent pools

Although patent pools are occasionally created to permit patents with essential claims owned by multiple parties to be licensed from a single source, for a single fee, under a single set of license terms, this is normally the result of arms-length negotiation in which there is no direct link between the standardization effort and the pool organizers.

A notable exception among the studied SSOs is IEEE, which in 2008 entered into a 2-year cooperation agreement with the patent pool administrator Via Licensing. Public sources reported that the aim was to set up pools ‘soon after standards were issued’, and that the participation in pools would be voluntary.¹²³ Not much was heard of this cooperation, however. In August 2012, the IEEE 802.11 Patent Pool Exploratory Forum was created, an effort to streamline the process

best meet the technical objectives, are not prohibited under ETSI Directives.’ It is interesting, also, that this sentence refers to ‘*whether solutions best meet the technical objectives*’ (emphasis added), while such ex ante disclosures only provide *commercial* information.

¹²² An IETF representative clarified: “The large majority of IETF participants do specify licensing terms in their patent disclosures, and the majority specify RF/non-assertion terms. As noted in Contreras (2011), at 25-26, of 481 total patent disclosures made from 2007-2010, 366 (76%) contained a voluntary disclosure of licensing terms. Within this number, 283 such disclosures committed the patent holder voluntarily to offer RF terms or not to assert its patents.” Reference: Contreras, J. (2011). An Empirical Study of the Effects of Ex Ante Licensing Disclosure Policies on the Development of Voluntary Technical Standards. National Institute of Standards and Technology (NIST).

¹²³ www.eetimes.com/electronics-news/4080218/IEEE-joins-move-to-patent-pools.

of pool formation.¹²⁴ It is an activity of the IEEE Standards Association (IEEE-SA) Industry Connections, however, and not one with Via Licensing or another existing pool administrator.

In 2011, Via Licensing also became member of the NFC Forum, with the apparent goal to create a patent pool for NFC technology. This attempt seems to have been banned now.¹²⁵

There is one interesting example of where a standardization effort has been integrated with one to create a pool: the DVB project. Although this standard setting effort is not among the 10 SSOs selected for this study, the reader is recommended to read a set of well-documented papers.¹²⁶

From an economic perspective, there is little difference between a royalty-free IPR policy and an (all-inclusive¹²⁷) patent pool that sets its price at zero, except that the former avoids a host of transaction costs associated with creating the structures that support a royalty-bearing pool. In that respect, the HDMI Forum functions as a sort of hybrid between a traditional patent pool and an SSO founded on RAND-RF terms, because the original contributors receive royalties while those that were later invited to join the SSO do not.

6.6 Reflection on licensing commitments

In a similar fashion to our reflection on disclosure obligations (Section 5.6), we conclude that the licensing commitment processes are hard to evaluate as long as clear, explicit goals for this important element of IPR policies are lacking.

If the goal is merely to avoid essential claim surprises involving members of SSOs after a standard is adopted, then most policies will generally achieve this result. For this purpose, the absence of disclosure of specific licensing terms matters less, as actual licensing negotiations will either occur on a one on one basis outside the development process while it continues, or will occur after a standard is adopted. If, however, the goal of disclosure information is to inform the standardization effort about the selection of technologies (and many but not all policies have elements that hint at that), then other elements become important. Firstly, timing: information about the (non)availability of licenses, and, perhaps, sample agreements or other early statements on the costs of these licenses, would be needed at the time when technological decisions are

¹²⁴ IEEE Press Release, 6 August 2012. IEEE 802.11 Patent pool exploratory forum launched: IEEE 802.11 Patent Holders Encouraged to Discuss Licensing Issues and Consider Ways of Streamlining Pool Formation. Available at <http://standards.ieee.org/news/2012/802pat.html>.

¹²⁵ An NFC Forum representative clarified: “There is not now, nor has there ever been, a formal business relationship between the NFC Forum and ViaLicensing. ViaLicensing did not renew its annual membership in the NFC Forum, which expired in March 2012. It is our understanding that ViaLicensing has suspended its NFC patent licensing program.”

¹²⁶ Eltzroth, C. (2008). IPR Policy of the DVB Project: Negative Disclosure, FR&ND arbitration Unless Pool rules OK Part 1. Journal of IT Standards & Standardization Research, 6(2), 18-39, and Eltzroth, C. (2009). IPR Policy of the DVB Project: Negative Disclosure, FR&ND arbitration Unless Pool rules OK Part 2. Journal of IT Standards & Standardization Research, 7(2), 1-22.

¹²⁷ Assuming that this pool would assemble exact the same IPR holders as those that would accept to license their patents at RF conditions.

made. Also, the information would need to be detailed enough (e.g., actual pricing terms) to determine which elements in proposals and draft standards would be affected at what cost, to allow assessment of what opportunities might exist for designing around more expensive technology, and to estimate the costs and benefits of alternative solutions.

As a matter of illustration, we now turn to a policy in the study set where feedback of this information is permitted to play a role. The IEEE policy specifies that the relative costs of different technical approaches (including licensing fees, insofar as they are disclosed in the manner permitted under the IEEE IPR policy) may be discussed during the standards development process. Even prior to this change, the publicly available declarations archived by IEEE clearly show which patents will be available on RAND-RF terms, and which patents may only be available on a royalty-bearing basis. At the same time, IEEE provides appropriate safeguards to ensure discussions in working groups do not lead to antitrust concerns. One may not coerce a patent holder who has chosen not to provide information about fees, and the price at which a compliant product would be sold (if disclosed) may not be discussed.¹²⁸ IETF further states that at this SSO, it is held: *‘reasonable that a working group will take into account their own opinions of the validity, enforceability or applicability of Intellectual Property Rights in their evaluation of alternative technologies.’* (IETF, RFC 3979, §8). For a working group to come to ‘its own opinion’ it seems reasonable to assume that in IETF they are allowed to discuss these attributes (although not pricing or other licensing terms). An IETF representative clarified that: *‘No formal complaint has ever been registered with the organization regarding this practice, and it is widely viewed as useful and productive by participants.’*

However, in all other organizations of which the authors are aware (other than VITA), only technical merit and the high level options elected by the owners of essential claims may be discussed within a Working Group.

Finally, we wish to point out that IETF also includes the (unusual and creative) requirement that in order for a standard to be considered a final ‘Internet Standard’, there must be at least two independent implementations of the draft specification. Such an approach is interesting, because it could be seen as an alternative approach (to licensing commitments) that relieves IPR problems and promotes availability of licenses to implementers. While it does not create solid assurances, it could be argued to promote early access to patented knowledge. In practice, however, the sponsors of most IETF standards do not seek promotion to Internet Standard status and the technical documents known as RFCs are treated by the industry as final standards. As a result, there is little experience how this mechanism works out in practice in terms of promoting availability of licenses.

¹²⁸ See IEEE-SA Standards Board Operations Manual Subclause 5.3.10.

7 Conclusions and reflection

In this final section, we will consolidate and expand upon a number of observations presented in earlier sections. As we observed at the outset, this report does not aim to assess or rank individual IPR policies qualitatively. Instead, we have sought to place our findings in a wider context and reflect on how we believe specific elements of IPR policies, both in general and within the study set, meet (or do not meet) their goals, as well as the goals that might be assumed of the wider field of non-member implementers and compliant product and service users. These goals could be explicit in the policies themselves, could be implicit from the overall tenor and terms of policies, or could be those goals that are generally considered to be intrinsic to the concept of standards development and implementation.

While the following observations may sound overly critical to some and unrealistic to others, we would like to stress that IPR policies have dramatically improved in their clarity and process effectiveness over a comparatively short period of time. For the largest part of the 20th century, most traditional SSOs had only brief, rudimentary, non-procedural statements of policy relating to IPR. But changes were already on the way. In the late 1980s and early 1990s, serious conflicts relating to essential IPR in standards had begun to surface, and in the absence of applicable, robust IPR policies, such conflicts turned out to have very substantial real-life consequences, including unsurpassable entry barriers to standards-based markets.¹²⁹ Also the Rambus case demonstrated the type of problems that can emerge if SSOs have no (clear) policies. Since then, more and more standards setting organizations have introduced IPR policies and many were improved over time. Today, it is rarely, if ever, feasible to launch a new SSO in the ICT sector unless the founders have already agreed upon the terms of a state of the art IPR policy.

But this does not mean that the marketplace has as yet resolved all areas of potential ambiguity and conflict. Most SSOs are, after all, membership organizations, and almost all beneficial restrictions come with complementary impositions. Where a potential issue is expected to arise only rarely, then such an imposition may be perceived to be unreasonable. When the issue in question does arise, it can be tolerated as an acceptable “cost of doing business”. When the marketplace changes in such a way that the likelihood of the same issue arising increases, however, SSOs may begin to amend their policies in response across the marketplace, albeit irregularly and slowly.

Moreover, markets have become increasingly dynamic in ICT sectors in the past few years. Partly because amending an IPR policy is so burdensome in itself, some preexisting concerns nominally addressable by IPR policies have still not been sufficiently dealt with in IPR policies, and most

¹²⁹ See Bekkers, R., Duysters, G., & Verspagen, B. (2002). Intellectual property rights, strategic technology agreements and market structure - The case of GSM. *Research Policy*, 31(7), 1141-1161, and Bekkers, R. N. A. (2001). *Mobile Telecommunications Standards: GSM, UMTS, TETRA and ERMES*. Boston, MA: Artech House.

new concerns (e.g., relating to the transfer of patents with essential claims to new owners) are only just now being addressed in IPR policies. We do recognize it is very difficult to define a policy that balances the various stakeholders' interests, provides enough flexibility to work in practice, keeps participants committed to contributing and implementers willing to adopt, on the one hand, and at the same time can effectively prevent patent holdup and other forms of abuse addressable by an IPR policy on the other. And perhaps most of all, we recognize that amending an IPR policy is viewed (accurately) by those responsible for managing SSOs as being as recreational as undergoing root canal surgery. Yet we feel that progress can, and should, continue to be made.

7.1 Policies often have no explicit goals

IPR policies have multiple audiences, not all of which have the same visibility into their creation, nor the same degree of familiarity with the tensions and tradeoffs that are typically reflected in such documents. Those audiences include not only SSO members, but also non-member implementers, regulators, judges and juries, academics in areas such as economics, and policy makers. Yet when most of these audiences turn to the text of a typical IPR policy, they will find little or no guidance on the specific goals the policy is intended to advance, and even less to explain why apparent tradeoffs have been made that may seem to significantly undermine the ability of the policy to achieve those goals.

Nor can it be assumed that those goals are likely to be identical from SSO to SSO. For example, prior to the rise of ICT, standards in the United States were developed by discrete SSOs working in independent organizations, with comparatively little interchange between those active in one 'silo' or the other, except as a consequence of participating in ANSI activities. In such a context, goals, terms, and practices could, and did, evolve in different directions, and the goals (or at least the tolerable tradeoffs) underlying a given SSO's individual policies might be in doubt.

In the ICT sector today, there is also a significant range in goals and tradeoffs. At the same time, however, the drafting and negotiation of IPR policies in ICT is accomplished by what might seem to be a surprisingly small number of individuals – at least until it is remembered that lawyers are expensive, and that only a comparatively small number of companies are active enough in SSOs, and own large enough patent portfolios, to be sufficiently motivated to allocate significant resources to influencing what IPR policies say. When it is recalled that many of the same companies have become increasingly diversified as a result of acquisitions, and that the convergence of technologies (e.g., in mobile devices) can bring a bewilderingly broad number of technologies into the vendors of a single product, then it can easily be imagined that the generation of IPR policies was destined to become more, rather than less incestuous. These same companies are also disproportionately likely to be the founders of new SSOs, and therefore to be most influential in the creation of new IPR policies as well.

As a result, the majority of those that are involved in the creation and amendment of ICT IPR policies are not only extremely well versed in alternative terms and treatments, but also of the preferences in terms and concerns of the companies represented in the process. Needless to say, they have also become well acquainted with each other on a personal level, and also interact in a variety of committees in multiple venues on a regular basis.

From this perspective, there is little or no ambiguity whatsoever in the goals being pursued when a policy is created or amended, even to the extent of understanding what is not being said, but is motivating a particular preference or terminology. At the same time, it is important to realize that while the interests and strategies of those around the table may be quite transparent to their peers participating in the creation of a new IPR policy, it is not likely that they will be willing to record their goals in print, or that those goals will be more than a rough compromise. The result is the production of policies that are heavy with language, and light to empty when it comes to elucidation. The result is likely to be a document the goals of which were clear to those that created it, but which is mostly opaque to those that will need to live under it, be impacted by it, or be tasked with interpreting it in court.

Clearly, this is not an ideal state of affairs. Ideally, at least for those on the outside looking in, policies should have goals that are sufficiently well-defined to allow assessment of whether they are being met, and (better yet) measurable objectives, though the latter may not always make sense in the given case. Although some policies include general statements about what they aim to achieve (such as ‘ensure availability of necessary licenses’, or ‘balance between interests of stakeholders’), these are rather abstract, high-level goals that give no insight into where such a specific balance point is intended to be found. Similarly, policies usually fail to define exactly what situations they aim to prevent. It can be understood ‘between the lines’ that most policies have as their main goal the prevention of patent holdup (good definitions of which can be found in the 2007 DoJ/FTC report¹³⁰ as well as in a ABA handbook on the Antitrust Aspects of Standards Setting).¹³¹ Yet while this goal remains implicit, none of the policies attempts to even define what ‘fair’ or ‘reasonable’ fees are intended to mean in context. Nor do they state that at minimum, such fees must bear a reasonable relationship to the economic value of the IPR, despite that fact that this benchmark is stated explicitly by the FTC in its report on evolving IP marketplace,¹³² as well as in the European Commission’s relevant Guidelines on horizontal co-

¹³⁰ U.S. Department of Justice, Federal Trade Commission. (2007). Antitrust Enforcement And Intellectual Property Rights: Promoting Innovation And Competition 35. U.S. Department of Justice & Federal Trade Commission.

¹³¹ ABA Section of Antitrust Law. (2011). Handbook on the Antitrust Aspects of Standards Setting (Second Edition). Chicago (IL): American Bar Association.

¹³² FTC (2011). The Evolving IP Marketplace: Aligning Patent Notice And Remedies With Competition. Federal Trade Commission. See pages 191-194 and 234-245, in particular.

operation agreements.¹³³ Including such a minimalist definition would seem to be useful if the SSOs adopting such policies are serious about preventing patent holdup from occurring.

Unless and until SSOs begin including such elaborative detail in their policies, those seeking to understand the intentions underlying IPR policies will be left with few alternatives (besides guessing) to interviewing standards professionals in connection with academic research, and, where litigation is already in process, to calling such individuals as witnesses (either in their capacity as direct participants or as experts in their field).

7.2 No definition of RAND

In most policies, RAND is the most important (or minimum) licensing commitment sought from IPR owners. As noted above, none of the policies in the study set seeks to define the term ‘reasonable’ (and/or the term or ‘fair’, if the policy refers to FRAND). Likewise, ‘non-discriminatory’ also is left to the parties involved to agree upon (or to the courts, if they cannot). Nor are the policies of the study set, unusual, as this absence of definitions is normative across virtually all IPR policies.¹³⁴ At the same time, the number of disputes on standard-essential patents is rising and become increasingly troublesome: in court cases, parties can be expected to propose widely diverging interpretations of what RAND should mean, or what it might have meant to those crafting the SSO IPR policy in question. And because to date the definition of RAND has only been adjudicated in a handful of cases spread across diverse, usually independent jurisdictions, judges and juries have little guidance, and usually no applicable precedents, to draw upon when called to reach a decision.

In point of fact, providing a definition (which is not to say reaching consensus on a definition) would not be difficult. For example, if a primary goal of an IPR policy is to prevent hold-up, then a RAND compatible licensing fee could be defined as any fee up to the maximum fee the IPR holder would have been able to require before the technology was incorporated into a standard (the *ex ante* price), or perhaps the marginal price (the additional value of the standard after incorporating this technology). On the other hand, if the overall aim of the policy is to ensure that the aggregate licensing burden should not go beyond a certain point, then the policy could have a RAND definition directed at that goal. (Admittedly, RAND-RF policies already do so, but in a way that eliminates the need to agree upon, or apply a formula at all.) Other theories have been advocated by patent owners, standards implementers and regulators.

¹³³ European Commission (2011). Communication from the Commission (2011/C 11/01) on Guidelines on the Applicability of Article 101 of the Treaty on the Functioning of the EU to Horizontal Co-operation Agreements. Available from <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2011:011:0001:0072:EN:PDF>. See paragraph 289 in specific.

¹³⁴ This result is not always due to a failure to address the issue. One of the authors (Updegrove) has attempted numerous times to interest the founders of new consortia in defining the terms ‘reasonable’ and ‘non-discriminatory’, almost always without success. In those few cases where rudimentary descriptions were included, they were later removed in order to facilitate recruitment of additional members that objected to including any definitions at all.

Seemingly, all concerned would benefit from agreeing in advance, at least within a given SSO, regarding what RAND should mean. Vendors and patent owners could achieve certainty and avoid expensive disputes, and competition should benefit. And yet few (if any) IPR policies to date have pursued this course of action. The main reason appears to be that individual patent owners wish to preserve their freedom of movement in one on one negotiations with licensee/implementers of standards.

A common rationale given for not including such definitions is that patents are usually licensed in packages relating to building specific products, or numbers of products, rather than to implement a single, discrete standard, thereby making it difficult to break out the cost of (only) patents with essential claims. Given the level of convergence to be found in many ICT products, this is certainly a valid observation. However, this is a complicating, rather than an invalidating factor, and does not in any case address the situation to be found in all SSOs or in all standards.

It would seem that progress might be made in this area to general advantage, at least in a given and appropriate situation. To be clear, we are not recommending one definition of RAND over another (it should be up to an SSO to define its own goals), nor do we doubt that arriving at a definition of RAND in any given setting would be a time consuming task. But within some reasonable context, perhaps some SSO will take on the challenge (e.g., by considering a band of RAND rates with a lower and higher boundary), just as VITA and IEEE took up a similar (and very considerable) challenge in the case of *ex ante* disclosure, a comparably controversial and complicated addition to their policies).¹³⁵ Where this is possible, implementers, regulators, judges and consumers would all be better able to properly understand whether RAND commitments made have been faithfully carried out.

7.3 Lack of guidance on appropriateness of including patented technology and risk of over-inclusion

Although the policies we examined all discuss what should be done *if* standards include patented technology, few policies discuss when that is desirable. In fact, there is hardly any guidance on when it is appropriate or not to include patented technology in standards. At best, the SDO provides some snippets of information. For example, OASIS explicitly encourages the submission of existing, patented technical work, while ANSI, in contrast, notes that including patented technology *may* be justified if ‘technical reasons justify this approach’. It is significant to note, however, that under several of the licensing modes available under the OASIS IPR policy, any included technology would be required to be licensed on RAND-RF terms, while under the ANSI

¹³⁵ The upper boundary being that if the licensor would turn down such an offer from a prospective licensee, it would be breaching antitrust law. A further example could be as follows: suppose the SSO set a maximum cumulative licensing burden of 5%, and subsequently starts to include all types of ‘expensive technologies’ into the standard, then the IPR owners can be faced with a situation whereby they can only demand a fee substantially below RAND.

policy historical assumption would be that including technology would result in the need for implementers to pay royalties or other license fees.

In ICT standardization settings, where technical committee members typically both own patents and agree upon the content of standards, there can be strong incentives for such participants to drive their own IPR into standards. While this can result in many participants competing to have only their own IPR included, it can also result in collusion, with multiple participants allowing each other to include IPR into a final standard. In fact, recent studies have shown that the inclusion of patents with essential claims is determined to a greater extent by the IPR owner's ability to influence the content of the standard than by the actual technical merit of the technology protected by the patent.¹³⁶ The result can be that very large numbers of patent claims are declared to be essential in some ICT standards areas.

These concentrations are readily visible in several IPR databases. Some recent standards cover over one and a half *thousand* essential patent families, and when multiple standards are combined in devices (like 2G GSM, 3G W-CDMA and 4G LTE), the cumulative number of essential claims asserted can run into the many thousands. Furthermore, the ownership of these patents is concentrated in a few large IPR owners per standard.¹³⁷ But the distribution of claims across owners can also have a long tail, resulting at times in as many as a hundred different IPR owners claiming licensing rights in relation to a single standard. Admittedly, the standards in question are complex and broad, but nevertheless it can easily be wondered whether so many patented technologies (each enabling their owners to collect licensing fees) are really necessary to create a standard that meets the design requirements.

In the light of the above, the lack of guidance on whether a given SDO does, or does not, wish to minimize licensing requirements may be problematic, and may lead to levels of technology inclusion that far exceeds optimal results from a public perspective. Over-inclusion of technologies can therefore lead to unnecessary costs for the consumer, both in terms of 'direct' licensing costs passed on to the purchaser, as well as the costs associated with oligopolistic competition in the upstream market for necessary technologies. In addition, the number of distinct right holders (absent their combination in a patent pool) can have a significant negative impact on the efficiency of standards adoption, due to the administrative burden imposed by the need to obtain so many licenses.¹³⁸

¹³⁶ Bekkers, R., Bongard, R., & Nuvolari, A. (2011). An empirical study on the determinants of essential patents in compatibility standards. *Research Policy*, 40, 1001-1015.

¹³⁷ Blind, K., Bekkers, R., Dietrich, Y., Iversen, E., Köhler, F., Müller, B. et al. (2011). Study on the Interplay between Standards and IPRs. Final Report. Study commissioned by European Commission Tender No. ENTR/09/015 (OJEU S136 of 18/07/2009). Brussels: European Commission. Retrieved from http://ec.europa.eu/enterprise/policies/european-standards/standardisation-policy/policy-activities/intellectual-property-rights/index_en.htm. See page 36 in particular.

¹³⁸ Some of these effects are successfully mitigated by the formation of patent pools, but such pools only exist for a small number of standards that cover essential patents.

In recent years, concerns with over-inclusion of IPR have indeed been raised by leaders in the standards development field. For example, at a recent European Commission meeting attended by over a hundred specialists in the field of patents and standards, the chairman of ETSI's IPR Special Committee (and current chairman of the ETSI General Assembly)¹³⁹ spoke of the *"increasing number of marginal patents"*, as well as the *"risk of complicating the solutions just for getting patented, technology into the standard rather than to improve the standard"*.¹⁴⁰ He also noted that *"no mechanism exists to determine whether a patent claim brings a standard forward (real innovation) or just tries to get a patent into the standard in order to make money"*. The last observation is especially valuable, as it points to the source of the problem rather than the symptoms. Instead of focusing on mitigating problems that may arise after standards have already been adopted (e.g., essential claims asserted at a later date), we should perhaps look more closely at the process itself. Why has such a flood of essential patents found their way into standards in the first place?

We believe that SDOs should reexamine their goals in standards development, and ensure that both their IPR policies, as well as their management of the standards development process, reflect those goals. Of course, where an SDO's decision-making process is dominated by the owners of large patent portfolios, it may be that the SDO's process is already reflective of the SDO's goals (or at least those of the decision makers). In such cases, regulators may be interested in considering the behavior and incentives of both working group participants, as well as those that control the development process. Once the underlying motivations of participants and process managers are understood, one can begin to consider what mechanisms might have a more optimal outcome from the perspective of implementers and consumers.

While several policies mention feedback processes, where knowledge of IPR protection and costs *can* be valuable input in the decision whether or not to include certain technologies, none of these policies provided real guidance on (for example), on how strongly to work towards a specific result.

We feel that the lack of guidance on technology inclusion, combined with the absence of counterbalancing forces (such as sufficient implementers with few or no patents also participating

¹³⁹ Dirk Weiler, Standards related patent quality, *A view from a standardisation organization*, EC/EPO Workshop on "Tensions between intellectual property rights and standardisation: reasons and remedies," Brussels, November 22, 2010. Available from http://ec.europa.eu/enterprise/sectors/ict/files/ict-policies/5_weiler_en.pdf.

¹⁴⁰ A nice piece of anecdotal evidence is the following: at a recent academic conference, the former head of R&D of a large multinational firm explained how its staff would sit down after each working group standardization meeting, to determine how they might file for patents that would cover or combine elements discussed, or file for patents that could become essential technologies for the next step. It was also clear that this was common behavior in the SDOs active in this industry sector. Obviously, the patenting of technologies does not, in and of itself, add any merit to the standard – although it would add to economic and administrative burdens in doing so. (To prevent naming and shaming, we will not disclose the name of the particular firm here, but if desired this information and audio recordings of that meeting can be made available to NAS Committee members.)

in the same working groups)¹⁴¹ are matters that require serious attention. While it is not immediately obvious how such imbalances could easily be addressed, awareness of the importance of having a more balanced technology inclusion system would be a good start. One way to proceed would be for SDOs to require a more conscious technology inclusion process, in which the merits of any patented technology (in the light of the standard's design requirements) are weighed against the costs¹⁴² of including such technology. Processes for *ex ante* disclosure of a patent owner's most restrictive licensing terms could be a valuable help, but the success of that approach depend on the design of such a process, and also on whether participants would be willing to support that process and make it work.

Another option would be to give Working Group Chairpersons the responsibility to oversee the inclusion process, to report on any included technology that is (by disclosure) known to be covered by an IPR, and to report on the Committee's deliberations on costs and merit that led to the decision to include that technology. This record would be taken into account in deciding whether or not to proceed to a final vote on adopting the standard in question.

At the same time, we recognize that any discussion by competitors of costs in a collaborative setting significantly raise the legal risk of violating antitrust and competition laws, and that there would therefore be administrative burdens associated with the conduct and supervision of the development process in order to avoid liability. That said, two of the SDOs included in the study set (IEEE and VITA) have submitted, and received, approval to conduct just such processes, and the U.S. Federal Trade Commission has recognized the pro competitive effects that such *ex ante* disclosures could have.

7.4 Still a restricted degree of transparency

Disclosure is one of the main elements of most IPR policies, obviously with the objective of increasing the degree of knowledge and transparency relating to IPR in the course of the standards development process. In practice, it often remains ambiguous under the IPR policy and related process documents which information must be disclosed at what point in time, how it is to be used, and to whom it should be available.

The information that is usually visible as a result of the disclosure process is usually found in the IPR disclosure (and/or licensing commitment) databases published by most standards setting organizations. This information is relevant for a wide array of stakeholders:

¹⁴¹ Technical people may think about the analogy with an open feedback system. All the incentives are geared towards driving more and more patents in the standard.

¹⁴² When we talk of costs here we do not necessarily mean that the individual costs must be known, as in *ex ante* disclosure of the patent owner's most restrictive licensing terms. It can also be more of a general concept.

- **Actual and prospective implementers.** Vendors have an immediate need to know which parties claim to own essential IPR, which specific claims they believe are essential, and whether they require implementers to obtain a license. This allows them to know not only who they must contact to obtain any necessary rights, but also to assess whether they agree that the claims in question are indeed both valid and essential, as well as understanding the overall IPR coverage of a given standard and the relative position of the various IPR owners.
- **IPR owners.** Sophisticated owners of essential claims will wish to assess their essential claims in the context of the claims owned by others, and develop a general idea of what fee levels might be within the boundaries of their RAND commitment, based on their overall knowledge relating to industry norms and the past practices of other companies with which they may be familiar.
- **Policy makers and public authorities.** Reviewing disclosure databases can provide insights into whether the standardization process of a given SSO meets antitrust / competition policy requirements, as well as those of other policy areas where standards play a role. From an antitrust / competition policy, it is commonly understood that standardization activities that are properly conducted will automatically lead to some level of anticompetitive results (e.g., by limiting innovation within the parameters of the standard) and, when improperly pursued, can lead to impermissible anticompetitive outcomes (collusion, agreements between dominant players, patent hold-up). But it is usually assumed that, absent abuse, the pro-competitive aspects of standards development and uptake will outweigh the anticompetitive effects. Nevertheless, antitrust / competition policy authorities typically wish to monitor standardization processes to ensure that this is the case and that no unnecessary harm is done to competition. Since disclosure databases represent one of the few readily accessible (albeit extremely limited) windows into standards development, they are therefore very important.
- **Judges and Juries.** Disclosures, once made (and even more significantly, not made), become matters of record that cannot later be modified or supplemented, and therefore provide key benchmark of behavior during the standards development process. As a result, they are crucial to determining which parties are bound to specific commitments with respect to which essential claims, as well as to enable assessment of whether certain demanded fees bear a reasonable relationship to the economic value of the IPR (which almost by definition does require benchmarks).
- **Academics.** As with regulators, disclosure databases provide a crucial, empirical, available tool for gaining a better understanding of the standardization processes and its results. Insights gained and shared by academics can in turn better inform policy makers, anti-trust/competition authorities, and judges in their tasks.

Taking the above needs and uses of information in consideration, it is regrettable that there is still a considerable lack of transparency in the standards development process with respect to IPR. Below we provide a short, non-exhaustive list of areas of concern:

- a. We are not aware of any SSOs that have strict requirements for those that have disclosed essential IPR to update the information previously disclosed and represented in the SSO

databases There are several reasons why disclosed IPR might prove not to be essential at a later point in time: patent applications might be rejected, abandoned or expired, issued patents might have a narrower scope than sought in their applications, or the standard might eventually not include technologies for which the disclosure was previously made. (See Sections 5.3 and 0.)

- b. We are not aware of any SSOs that have requirements or mechanisms to update the information in their databases relating to the ownership of essential claims. Given the many thousands of patents that have been sold in just the last years, or which have otherwise changed ownership, the databases of many SSOs necessarily provide a less and less accurate view of essential claim ownership over time. This is particularly important because patent offices do not provide reliable patent ownership information either.¹⁴³ (See Section 0.)
- c. While permitting blanket disclosures is understandable from the perspective of easing the burdens on members of participation in SSOs, they provide far less information relating to the actual essential landscape that implementers may need to address. They leave the door open to unexpected later assertions of licensing requirements, especially where the essential claims in question have been transferred to a new owner with a different business strategy (e.g., where the transferee is a non-practicing entity). If an implementer or other type of stakeholder wishes to protect itself from such a result, it would need to undertake often significant search costs, assuming they are able to create this information reliably themselves (See Section 5.4.1). Even then, since essentiality is frequently a subjective determination, the entity conducting the search would not know with certainty whether their conclusions would match those of the patent owners themselves.
- d. Some SSOs do not make essential claim disclosures and/or licensing statements public, leaving many stakeholders totally in the dark.

While many of the above situations can be well understood from the history of these IPR policies and the interests of certain categories of stakeholders (e.g., the terms of IPR policies are disproportionately influenced by the efforts of owners of large patent portfolios, who therefore favor the permissibility of blanket disclosures), we think that the role essential patents currently play justifies rethinking the balance. This concept is particularly relevant from the anti-trust/competition perspective, because of inequities in position between the owners of large patent portfolios and those with few, or any patents, because the former frequently have pre-existing cross license agreements that can reduce, or zero out entirely, any fees relating to essential claims under a standard. In contrast, a small company will rarely enjoy a similar situation. We believe that it would be fruitful to investigate whether the benefits to other types of stakeholders would outweigh the burdens associated with requiring the holders of essential IPR to provide identifiable, accurate and up-to-date information about both their IPR and its ownership. Even when considering the position of the IPR owner, it could be argued more explicitly that IPR

¹⁴³ Most patent offices allow patent holders to inform the office of ownership changes (and usually this is reflected in public records), but do not have a requirement to do so.

policy obligations (including RF obligations, in some policies), are the cost of being allowed to sit at the table and promote a particular technology as the standard, which often also brings other benefits to the participants (e.g. experience and know-how of that technology, head start in implementation, compatibility with existing product lines, etc.).

Finally, concerning transparency, we turn to the way this information is made available to SSO members and the public. While such data is often available via the Internet, there is a staggering (if not surprising) diversity of organization and quality of on-line databases (and sometimes simply aggregations of documents or lists). Often, information is incomplete (e.g. lacking dates), erroneous, or ambiguous. Many of these databases therefore make it hard for the stakeholders listed above to obtain comprehensive and accurate information. A good example of a database that does meet user needs is the ETSI database, which has been completely overhauled as part of an ambitious initiative involving both ETSI and the European Patent Office.¹⁴⁴

7.5 Large variation in detail and specificity of policies

As becomes apparent from many of the tables in this report, there is a very large diversity in IPR policies, both in the main features, the level of detail, and the nature of the contained terms. Some policies are clear and detailed, while others leave many important aspects implicit or even undefined. Much of this diversity is quite understandable, and results from a variety of causes, including: organizational based membership vs. individual members or contributors; the standardization process adopted; different legal settings; different technology areas associated with different legal concerns and technical issues; legacy issues; behavioral attitudes, and more.

However, lack of detail and ‘holes’ in many policies should be viewed as causes for real concern, because these deficiencies can provide incentives to engage in opportunistic or unwanted behavior that leaves those that implement and rely on standards at risk, even if the great majority of members continues to act in good faith. SSOs would be wise to not only review their policies on a periodic basis to ensure that they remain state of the art, but also review the policies of other SSOs as well. Such a comparison can be fruitful, because no single review is likely to identify all gaps that may be present.

7.6 Problems of legacy

Many SSOs across the ICT industry have improved their IPR policies over time. As we have noted at various points in this study, newer and more recently revised IPR policies are much more

¹⁴⁴ We would also like to take the opportunity to draw attention to a recent effort to harmonize the IPR databases on 13 large SSO, by one of the authors (Bekkers) and several colleagues. The resulting database will be made publicly available. See Rudi Bekkers, Christian Catalini, Arianna Martinelli & Tim Simcoe, *Intellectual Property Disclosure in Standards Development*. Paper at the NBER conference on Standards, Patents & Innovation, Tucson (AZ), January 20 and 21, 2012. <http://users.nber.org/~confer/2012/IPKE/program1.htm>.

likely to include more precise and comprehensive rules, while the remainder may use vague terms even where the most crucial concepts are involved (e.g., IPR when something narrower is intended), may fail to address important issues (e.g., transferability), and otherwise provide less guidance for those involved, as well as less protection for implementers.

Several IPR policies in our study set have undergone considerable changes over time as well. Not surprisingly, this has been particularly true for the policies of the traditional SSOs (which are older than consortia), and particularly with respect to the forms and templates used for disclosure and licensing commitments, which have become more and more complete and sophisticated over time. Also, over time, many SSOs have complemented their formal policies with clarifying and implementational documents, handbooks for chairmen, and so on.

While this development has usually been for the better, on occasion it can create specific challenges, and especially so if changes do not address issues of legacy.

1. Modified documents need to explicitly address how new rules or obligations relate to binding disclosures and commitments a party has made in the past (before a given change was implemented), and to working groups that are active at the time that changes become effective. In some SSOs, policy changes were complemented with extensive migration plans that addressed many relevant issues, but it appears that in many instances this may not have been the case. It may also be ambiguous whether an announcement represents a formal policy change, or a clarification. The difference is significant, because the latter could be argued to have retroactive effect. Even when the distinction is clear, disputes may follow, as parties could understandably contend that it would be unreasonable to be bound by a ‘clarification’ where the conclusion was not inherently obvious. Especially if the clarification is intended to introduce a ‘new’ type of interpretation, such a party could argue that at the time it made a decision (to join as a member, to disclose patents, to submit commitments) it could not reasonably have assumed that the later interpretation would apply to it. Assume, for instance, that an SSO clarifies that a party may include a defensive suspension term in its licenses of essential claims, but may not include a requirement of reciprocity. How should we regard older disclosures, made in a time when this was not clear?
2. It is important to recognize that there may be limitations, as well as complexities, in amending an IPR policy. For example, some parties might benefit from remaining subject only to the terms of an older version that was more beneficial to them (particularly if they have bad intent). To some extent, a carefully thought through transition plan can ameliorate such results, but only to the extent that obligated parties remain members, and therefore can be made subject to the new rules. Even in such a case, if a policy requires that only participants in a working group are bound with respect to their work product, then a member that participated in the initial creation of a standard (pre policy change) and not the revision of the same standard (post policy change) might not automatically become subject to ‘upgraded’ obligations under the new rules.

3. Changes in declaration processes (forms and templates for disclosure or licensing commitment) result in mixed databases. Entries in databases based on pre-form disclosures are particularly troublesome, as they often vary widely in clarity and scope. Terms made explicit in forms that were lacking before can also raise ambiguity. An example of an SSO in the study set with that have changed substantially is IEEE, which developed a more and more sophisticated Letter of Assurance template over time. In earlier days it also accepted ‘free form’ letters, which are now problematic because they are inconsistent, one to another, and typically do not contain the necessary clauses to provide certainty that certain policy elements will be binding.

It may be difficult, absent the cooperation of the SSO in question, for a non-member to determine what obligations the owner of an essential claim may be under where the IPR policy under which they were assumed has been amended, and the earlier policy is not longer publicly available, or where available versions of policies are not properly dated and identifiable.

7.7 Policies struggle with patent transfer issues

If there is one particular area where policies visibly struggle to address issues that are now the center of attention, it is on the topic of patent transfer.

Admittedly, those who drafted these IPR policies, in some cases almost two decades ago, could not have realized how dynamic many of the markets in question would become. An excellent example is the market for mobile telecommunications: many of the companies that now dominate this market either did not exist, or were in entirely different industries when the IPR policies that now apply were crafted. And many of the companies that were dominant then have become marginalized, have withdrawn from the market, or even been dissolved in bankruptcy. These events, conjoined with increasing levels of litigation over patent infringement, created incentives on both the supply as well as the demand side for the transfer of valuable patents, and more recently, what have come to be referred to as ‘standards essential patents’ (SEPs). Adding to the change in dynamics and the appetite for transfers have been broad developments in the patenting world, including the rise of NPEs,¹⁴⁵ patent aggregators, and Patent Asserting Entities (less affectionately referred to in some circles as ‘patent trolls’).

Such transfer of patents – and related questions over whether licensing obligations have transferred as well – has not yet been satisfactorily addressed in most IPR policies, or, indeed, in the courts. Although more than half of the policies reviewed now have clauses on patent transfer, the language, mechanisms and goals vary. Many still appear ambiguous and may not be legally effective in the some of the situations that ideally they should address, such as situations involving those acting in bad faith in ways the policies try to prevent. In fact, addressing all

¹⁴⁵ See Footnote 14.

situations in a legally enforceable way may be more than an IPR policy, without more, can be expected to achieve.

At first blush, it would seem surprising that although many SSOs in the study set had upgraded their policy to address patent transfer, none adopted the approach that might seem to be most obvious: to add a clause to the Licensing Statement where the submitter or respondent (usually the owner of the essential patent) agrees not to transfer the patent to a transferee that has not signed the a similar Licensing Statement (including a licensing commitment and the same transfer clause). This way, even with cascading transfers, the binding legal commitment would travel along. If this approach is complemented by a policy clause concerning bankruptcy (OASIS offers a good example here), then transfer issues would for the most part be effectively addressed.

Unfortunately, if such an approach should also affect existing commitments, it is unlikely to be adopted by any SSOs that have large patent portfolios, due to the associated administrative burden, and especially in the case of SSOs that permit blanket disclosures, because those making the disclosures frequently do not determine which essential claims they may own when they make such a disclosure. Substantial changes could wake up the ‘sleeping dogs’.

7.8 In summary

The importance of addressing IPR in standards properly continues to become a matter of greater concern for all classes of stakeholders. To the good, awareness of deficiencies in IPR policies is rising as well among SSO members, regulators and even among some consumers. While this increase in awareness and commitment is resulting in improvements to many IPR policies, certain weaknesses are likely to remain unless external forces are brought to bear, due to the burdens of effecting some otherwise obvious improvements in process and the disproportionate representation of some types of stakeholders over others in IPR policy development.

As can be guessed from the length of this study, the wide variations in the policies reviewed, and the mass of detailed documentation analyzed, there is less cohesion and exchange in best practices across SSOs than might be optimal. For better or worse, the single common level of experience and expertise of significance across the full spectrum of ICT SSOs is a small pool of individuals, some of whom are standards professionals, and the balance attorneys, with a small number of regulators rounding out the pool. While useful, this level of exchange has limits.

We hope that this study will play a role in informing the level of discussion and decision making that is need to ensure that the IPR related rights and concerns of all categories of stakeholders are properly reflected and implemented in the hundreds of SSOs that play an increasingly critical role in enabling our modern, networked society.

About the Authors

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¹⁴⁶ Blind, K., Bekkers, R., Dietrich, Y., Iversen, E., Köhler, F., Müller, B. et al. (2011). Study on the Interplay between Standards and Intellectual Property Rights (IPRs). Final Report. Study commissioned by the European Commission Tender No ENTR/09/015 (OJEU S136 of 18/07/2009). Brussels: European Commission. Available from http://ec.europa.eu/enterprise/policies/european-standards/standardisation-policy/policy-activities/intellectual-property-rights/index_en.htm.

¹⁴⁷ www.consortiuminfo.org/bulletins/

¹⁴⁸ www.consortiuminfo.org/standardsblog/

Annex 1: Detailed notes for the overview tables

Notes for Table 1

- (1) As noted earlier, ISO and IEC share JTC-1 with its focus on an unlimited scope of IT standardization.

Notes for Table 2

- (1) In ITU, references to the ITU policy can be found in “Resolution 1 (‘Rules of Procedure of the ITU [...]’), as well as in the ‘A Series Recommendations’.

(2) An IETF representative clarified: *“[there is a “formal relationship” between IETF and its participants]. Participants register for meetings, sign attendance sheets, receive notifications of policies (via the web site and a widely-distributed document known as the “Note Well” document, and must indicate their acceptance of the Note Well document prior to registering for an IETF meeting or mailing list. While IETF does not have a formally-constituted membership, we maintain that a legal relationship, and a set of binding legal arrangements, is in place between IETF and its participants.*

(3) IPR policy is defined in VSO Policies and Procedures and VITA Policies. These documents are binding for VSO members (individuals). But at all relevant places in the policy it states that this individual is making statements on behalf of the VITA corporate member who employs them. A similar text is used in the agreements the VSO member (individual) has to sign.

- (4) See the VITA bullet point in Section 3.2.

Notes for Table 3

- (1). A submitter of a Letter of Assurance may include a statement that certain affiliates are excluded from this statement. In such cases, IEEE will seek separate assurances from these excluded organizations.

(2) IETF is a special case here, as individual persons are the main entity, or firms. Note, however, that for many important policy aspects, individuals are required to act as an employee / representative of a firm or sponsor. For instance, for IPR disclosure, there is a disclosure commitment of IPR owned by them but also IPR held by their company. Having said that, there are no provisions for the possible affiliates of such firms.

- (3) This depends on the exact relationship between the entities in question, as further explained in Clause 2.1.2 of the IPR policy and in the FAQ, item 21.

Notes for Table 4

- (1) Although ITU, ISO and IEC have a common patent policy, only ITU has specific additional provisions that deal with including copyrighted items. ISO and IEC only have a patent policy that does not cover copyrighted items.
- (2) Although OASIS has an ‘IPR policy’ (not a ‘patent policy’) and there is no explicit part in the policy that explains the policy is only about patents, the wording of the relevant disclosure and commitment obligations specifically refer to patents (only).
- (3) The results for all policies that do not explicitly exclude commercially essential patents are shown in square brackets, although you could argue that their literal text (often saying that there is no alternative) should be interpreted as simply excusing commercially essential patents.
- (4) In RFC 2026 it states that at least two independent implementations are required for a standard to advance to the ‘Internet Draft Standard’ status, and that “*The requirement for at least two independent and interoperable implementations applies to all of the options and features of the specification.*” Since these implementations should all have independent licensing (if they cover essential IPR), one could argue that this is an indication that optional features are also to be considered essential IPR. This is a quite indirect assumption, though, so we refrain to come to an own interpretation for the table. (Apart from this discussion, an IETF representative commented, that this procedure is rarely used and we are not confident enough whether we can imply from this procedure that optional features are also considered essential.
- (5) Except for one specific standard, which is the existing HDMI standard for which the HDMI Forum develops newer versions.
- (6) See the explanation in Section 4.1.12.
- (7) This possibility is mentioned, but it is left to the standards setting organization whether it wants to include patent applications in its IPR policy or not.
- (8) Concerning patent applications, some ambiguities exist.
- (9) Indirect normative references are excluded (i.e. if there is a normative reference to a standard that in turn has normative references).
- (10) Subject to whether this party is actually the submitter of the technology in question.
- (11) An ITU representative clarified that “*Only mandatory portions of the standard can be considered as “essential”.*”
- (12) ITU (but not ISO or IEC) has an additional, separate, policy the inclusion of marks (i.e. trademarks, service marks and certification marks) in ITU-T recommendations. But these marks are not part of their regular essential IPR definition.
- (14) While the ANSI *Guidelines on Software in Patents* are stated to be ‘*for the inclusion of normative software*’, some later clauses (‘whenever software is included in a standard’) may also cover software that is for informational purposes, not only normative software.

(15) ETSI does not explicitly distinguish between individual claims, but the commitments only apply to patents to the extent that they end up being essential. As such, actual licensing commitments are restricted to essential claims. Nevertheless, the essentiality definition is about patents as such, not claims.

(16) In its *ANSI Essential Requirements: Due process requirements for American National Standards* document, there is a section on Commercial Terms (Section 3.2) that could arguably have implications for using trademarks or comparable protections in standards.

(17) For ITU/ISO/IEC this is a bit of a puzzle. While the licensing commitment uses the word ‘Patent’, it is written in capitals and thereby refers to the definition of ‘Patent’ in the Guidelines. This definition is actually not what one typically expects, but is one of what we would call an *essential* patent: “*The word “Patent” means those claims contained in and identified by patents, utility models and other similar statutory rights based on inventions (including applications for any of these) solely to the extent that any such claims are essential to the implementation of a Recommendation | Deliverable. [...]*”. As a consequence, the commitment is only made to the extent the patent is in fact essential.

(18) An IETF representative clarified: “*See RFC 5378 and Trust Legal Provisions. All code components included in IETF documents is automatically licensed under the BSD open source license.*” This requirement applies both to “essential” and “non-essential” copyrights in software code, as no differentiation between the two is made.

(19) It does have a policy on test suites: see www.w3.org/Consortium/Legal/2008/04-testsuite-copyright and www.w3.org/2004/10/27-testcases.html.

Notes for Table 5

(1) For ISO and IEC specifically, this obligation also extends to ‘a recipient of a draft standard at any stage in the standards development process’.

(2) ANSI encourages accredited standards developers to promote early disclosure, for instance by having disclosure obligations. But this is not a strict requirement in order to comply with the ANSI requirements.

(3) ETSI can send out specific requests, especially to non-members, but these are for licensing commitments, not patent disclosure.

Notes for Table 6

(1) This encouragement is especially stressed if the patents are held by a non-participant.

(2) ANSI encourages accredited standards developers to promote early disclosure, for instance by having disclosure obligations. But this is not a strict requirement to comply with ANSI requirements.

(3) In the OASIS policy, this obligation for participants is worded as ‘should’, whereas the disclosure obligation for their own patents is worded as ‘shall’. So it seems a weaker obligation, but nevertheless an obligation.

(4) There is a disclosure obligation for those third-party patents that are licensed. For all other third-party patents, the VITA policy has a weaker wording than the regular obligation (‘must’ instead of ‘shall’) and should probably be interpreted as ‘encouraged’.

(6) Disclosure of third party is only required when ‘the Advisory Committee Representative or Working Group participant has been made aware that the third party patent holder or applicant has asserted that its patent contains Essential Claims’

Notes for Table 7

(1) Some parts of this common policy refer to patents that are [believed to be] actually essential, while others refer to patents that may be essential.

(2) Additionally, Letters of Assurance refer to patents that ‘might be or become’ essential.

(3) In ETSI, the primary clause for the disclosure obligation does not use any wording like ‘believe’ or ‘may’. However, the forms in which firms actually make their licensing declarations state that the declarant ‘believes that its patents may be or may become essential’.

(4) Not relevant because no general disclosure obligation is defined.

(5) The policy uses the following wording: ‘[the knowledge] an individual knows personally or, because of the position the individual holds, would reasonably be expected to know.’

(6) This policy uses the term ‘good faith but this is a bit of a ‘weak’ clause, as it is used to explain that parties and individuals cannot be required to have full knowledge on their own patents, and may only be expected to act in good faith.

(7) Not specified in the policy but mentioned in a FAQ.

Notes for Table 8

(1) A W3C representative clarified: *“The patent policy states that if a participant files for a patent based on W3C work, it must disclose that application earlier than disclosure would otherwise be required. It makes no legal assertions about the validity of such applications.”*

Notes for Table 9

(1) ETSI has a new, early declaration form (GL) but as argued in Section § 6.1.2 we do not consider this to be a *disclosure* form.

(2) In the ANSI baseline policies, disclosures are not obligatory, but ANSI-accredited SSOs may include them in their procedures.

(3) At W3C, a participant either goes with the ‘default’ – which is to grant licenses on RF terms – and then it does not need to disclose. Or it decides to exclude its patents from RF terms (following appropriate procedures) and then it needs to make specific disclosures.

(4) An ITU representative clarified that while this is not stated in the policy, *“However, considering the global reach of an ITU Recommendation, it is expected that the whole patent family protecting a single invention will be disclosed.”*

(5) More specifically: ANSI recommends its accredited SSOs consider such a requirement in their policies.

(6) Also non-members can be requested to confirm whether they are willing to license their patents with essential claims' RAND conditions (as defined in the ETSI policy). These non-members do not need to use this form and can use an open formal declaration. An ETSI representative clarified us that *"they are encouraged to use the forms to be in line with the requirements of the ETSI IPR policy."*

(7) There is a web-based form that checks whether all fields are correctly filled. Alternatively, parties can submit forms via email. However, if such emails do not comply with the specific Sections of the IPR policy, they will be published but marked as 'non-compliant'.

(8) An IETF representative clarified: "The web form is optional, not mandatory. It is provided for convenience only. If an email disclosure is received, IETF personnel will insert it into the web form for publication."

(9) At VITA, disclosure and declarations records are placed in the organization's files, but the policy does not explain to whom these are available. They cannot be accessed by the public via the Internet, for instance. For more information, see the Supplement report, and also www.gtwassociates.com/answers/VITAdatabase.htm. However, disclosures (including licensing commitments) are made public by ANSI with respect to VITA standards that have been submitted to ANSI for adoption as American National Standards. See also the Supplement report for more information.

Notes for Table 10

(1) This is not specified in documents part of the IPR policy. It could be specified in other documents we did not investigate.

(2) The policy provides no information on this. But most likely not, as the adopted specification are not public either.

Notes for Table 11

(1) Licensing commitments can arise from submissions (if agreed by submitter)

(2) While the literal policy obliges *any* IPR holder to submit a declaration, representatives of ITE, ISO and IEC have clarified that this obligations only exists for parties participating in the work of the Organization. For ANSI the situation is similar. See for more details.

(2) Participants are 'Patent holders participating in the work of the Organizations', including those that participate via national standards bodies (in case of ISO and IEC). See also the discussion Section 3.2, which also explains why accolade brackets are used.

(3) At ETSI, the commitment is by default for all patent family members, worldwide, of the disclosed patent - unless a specific patent family member has been explicitly excluded in the commitment. This implies that commitments are worldwide.

(4) Upgradable means that commitments may be replaced at a later time, but only by commitments which are more favorable for the licensees (e.g. from RAND to RAND-RF).

(5) Unless the W3C Recommendation in question is no longer in effect.

(6) Since this body has non-assert commitments, there are no separate licenses between licensors and licensees.

- (7) Only when standards are withdrawn, may NFC Forum's Board of Directors decide to release the obligation of the IPR owners to new licensees (but must continue to respect them for existing licensees).
- (8) In ANSI, a patent holder can decide not to respond to the request to issue a declaration.
- (9) A VITA representative clarified that: "VITA's policies inherently allow any essential IP holder to declare their essential IP, and also declare that they will NOT license that IP. In fact, we have experienced [that situation in the past]"
- (10) At HDMI Forum there does not seem to be an opt-out option.
- (11) Those that choose to commit to RAND, can require bilateral reciprocity. Those who commit to RAND-RF, can opt to have the freedom to nevertheless charge RAND royalties to those licensees that did commit themselves to royalty bearing RAND 'only'.
- (12) The policy states: "[licenses] may not impose any further conditions or restrictions on the use of any technology, intellectual property rights, or other restrictions on behavior of the licensee, but may include reasonable, customary terms relating to operation or maintenance of the license relationship such as the following: choice of law and dispute resolution".
- (13) ITU/ISO/IEC common policy states: "[The licensing statement] must not include additional provisions, conditions, or any other exclusion clauses in excess of what is provided for each case in the corresponding boxes of the form." However, individual licenses may arguably still contain specific conditions that are within the RAND boundary.
- (14) At OASIS, allowing other licensing terms depends on the licensing mode of the TC in question. The 'RAND mode' and the 'RF on RAND' mode allow for other terms and conditions, as long they are reasonable, and non-discriminatory. The 'RF on Limited Terms' does not allow other terms and conditions than those specifically listed in the policy (such as reciprocity and defensive termination). It does allow reasonable, customary terms relating to operation or maintenance of the license relationship, including the following: choice of law and dispute resolution.
- (15) While this is only explicitly stated for the non-assert option, it seems to be the intention of the policy that this is true for all licensing commitments.
- (16) While the policy states that at least all LoAs received after December 31, 2006 are on the IEEE-SA website, the current version of the website suggests that all LoAs from 1993 on are now available, as well as older ones.
- (17) A NFC Forum representative clarified: '*Member IPR election forms are not made available to the general public. All IPR election forms are made available to members via a secure members Website.*'
- (19) Subject to whether they are aware of this; this is linked to the disclosure requirements discussed in Section 5.2.2.
- (20) Limited to IPR on own contributions.
- (21) Not as such, but ETSI does allow a declarant to provide a link to licensing conditions like most restrictive conditions, as part of its 'ex-ante policy' (see Section 6.4). Such links are in another place in the ETSI website than the regular commitments, though.

(22) One expert that reviewed this report and that is very knowledgeable about ETSI's policy noted: '[As I understand it, "irrevocable" in ETSI means that the license cannot be terminated by the patent holder for no reason. It does not mean that the license cannot be terminated for cause, such as for a failure to pay royalties or pursuant to a defensive suspension licensing term.]'

(23) All in this row is conditional to the extent these patents are actually essential, as far as the SSO defines so.

(24) In the case of a '*General IP Licensing Declaration (GL)*' it covers all patents that are eventually essential to the standard. See Section 6.1.2 for more details.

(25) While the licensing declarations sought by IETF are commitments in which the beneficiaries include any implementer, the route of requesting statements of suspected IPR owners is in practice not often used (see Section 6.1.1). Since parties can also make voluntary disclosures (which actually happens much more often), it is more relevant what is in these voluntary disclosures. For this IETF representative clarified: "*If commitments are made voluntarily in IPR disclosures, then the scope of those commitments will be whatever scope the maker desires, as informed by applicable law.*"

(26) This is not specified in the policy. An IETF representative clarified: "*Depends on wording of commitment, if any.*"

(27) An IETF representative clarified: "*Depends on wording of commitment, if any.*" When the standard form for specific IPR disclosure is used, however, the commitment covers only the use of the technology in order to implement the standard. The commitment sought by the Executive Director in the process of a request is also one limited to products that comply to specific standards.

(28) ITU/ISO/IEC do not permit the patent holder to add to or modify the form, which is required to be used for a commitment. But it is possible for a company to make a voluntary ex ante disclosure of terms through a contribution to the Study Group, etc.

(29) At VITA, disclosure and declarations records are placed in the organization's files, but the policy does not explain to whom these are available. They cannot be accessed by the public via the Internet, for instance. For more information, see the Supplement report, and also www.gtassoc.com/answers/VITAdatabase.htm. However, disclosures (including licensing commitments) are made public by ANSI with respect to VITA standards that have been submitted to ANSI for adoption as American National Standards. See also the Supplement report for more information.

(30) Public information is made available on which parties of a WG carry a licensing obligation because of participation (see for instance www.w3.org/2004/01/pp-impl/46884/showCommitments). Public information is also made available on the licensing commitments made by other members (not participating nor submitting), and invited experts (see for instance www.w3.org/2004/01/pp-impl/46884/showCommitments). Licensing commitments made by non-members are not yet available. A W3C representative clarified that "*[These are tracked but not yet integrated into the same table of commitments. We are actively working to integrate them into the [web pages on commitments].*"

Notes for Table 13

(1) Unlike all other studied SSOs, IETF has a policy that its standards may include technology covered by patents for which no licensing commitments have been made at all, if the working group believes this is an appropriate choice

(2) For security standards, however, the IETF states that there is ‘a consensus’ within IETF that FRAND-RF is the minimum level.

Notes for Table 14

(1) Although a group does not a priori decide on a minimum licensing requirement, *‘IETF working groups have the discretion to adopt technology with a commitment of fair and non-discriminatory terms, or even with no licensing commitment, if they feel that this technology is superior enough to alternatives with fewer IPR claims or free licensing to outweigh the potential cost of the licenses.’* (RFC 3979, at §8).

(2) For security standards, however, there is a consensus in IETF that RAND-RF is the minimum level (RFC 3979, at §8).

Notes for Table 17

(1) Not explicitly specified, although organizations can (and are encouraged) to provide ‘additional licensing information’, which could arguably include specific licensing fees as well. But this is not being mentioned anywhere in the IETF policy. An IETF representative clarified: *“The large majority of IETF participants do specify licensing terms in their patent disclosures, and the majority specify RF/non-assertion terms. As noted in Contreras (2011), at 25-26, of 481 total patent disclosures made from 2007-2010, 366 (76%) contained a voluntary disclosure of licensing terms. Within this number, 283 such disclosures committed the patent holder voluntarily to offer RF terms or not to assert its patents.”* Reference: Contreras, J. (2011). An Empirical Study of the Effects of Ex Ante Licensing Disclosure Policies on the Development of Voluntary Technical Standards. National Institute of Standards and Technology (NIST).

(2) In this organization, the minimum licensing commitment is RF or non-assessment, so ex-ante policy elements are not relevant