

Designing A Standard Essential Patent (SEP) Program

By Kelce S. Wilson

Standard Essential Patents (SEPs) are a unique form of intellectual property rights (IPR), due to various considerations that can notably impact their value and usage options. Some of these considerations include:

1. Potentially simplified infringement case, when litigated [1,2];
2. Easily-detectable potential infringement, to facilitate drafting claim charts prior to litigation discovery;
3. Readily-identifiable potential infringers, to facilitate identifying targets for an enforcement program;
4. Possibly global licensee pool, to financially incentivize multi-national prosecution;
5. Potentially limited enforcement options, such as a potential unavailability of an injunction [3];
6. Potentially limited royalty rates, due to (fair) reasonable and non-discriminatory ((F)RAND) limitations [4,5]; and
7. Affirmative commitments to license SEPs on FRAND terms in some standards setting organizations (SSOs).
8. Disclosure obligations of related patents and applications in some SSOs.

Some helpful, excellent articles explain advantages for organizations in certain industries pursuing SEPs as part of a patent portfolio [6,7]. Described herein are some issues to consider when designing a SEP program for patent portfolio growth.

What is a (true) SEP?

So, then what exactly is a SEP? One commonly accepted definition is that a SEP is a patent that claims an invention that must be used to comply with a technical standard [8]. A technical standard may be, for example, a 3GPP standard in the cellular industry or an IEEE standard for some network communication protocols. The key issue in determining whether a patent is truly a SEP, in many scenarios, is the phrase “*must be used*.” This means that all of the elements of at least one novel and non-obvious patent claim—not just the patent’s teaching, but specifically a claim—must map to a coherent portion of a standard that is actually practiced, using the properly accurate definitions for the words in the patent claim language.

Mapping a claim element to a portion of a standard means that any system or method, that is accurately described by the legal language used in the claim element, is also accurately described by the technical lan-

guage used in the particular portion of the standard. Since patent claims typically use legal-oriented language, and the standards use engineering-oriented language, this may mean proposing that the corresponding clauses in the different documents (*i.e.*, the patent and the standard) are effectively equivalent.

It is well-known that claim mapping is a highly-specialized skill that requires simultaneous mastery of legal and technical language, and is a challenging, time-consuming task [9]. For example, “Mapping of Patent Claims” states [9]:

The language and terminology used in patents is rather unique, and somewhat different from that used by technical engineers or product marketing personnel...The complexity of the products involved may make this mapping exercise extremely challenging. The product may contain hundreds or thousands of hardware, mechanical and software components. ...

Examining the patent claims:

This is the most obvious approach. However, it can be slow and labour intensive. (original British spelling.)

Therefore, determining whether a patent is truly a SEP can be a difficult process that requires multiple time-consuming steps, including at least the following:

1. Map the elements of the claim to the relevant standard. Note that all elements of a claim must be mapped—there can be no unmapped claim elements. This requires: (a) studying the claim language carefully to ascertain which terms that can affect the scope of the claim coverage; (b) studying the specification to understand how those terms are defined via the description of the invention; (c) studying the patent prosecution history, to ascertain whether any arguments made in order to get the patent allowed (*i.e.*, “prosecution disclaimer”) does not unfavorably limit the claim coverage; and (d) studying the relevant standard to understand the complex specific requirements and operation of the system.
2. Confirm that any differences in language between the claims and the standard (*i.e.*, legal language in the claims and engineering language in the standard) do not undermine the mapping. That is, despite differences, the language must be effectively synonymous or overlapping, rather than the mapping being an overly-optimistic “fish story.”

3. Confirm that the portions of the standard to which the claim elements are mapped (if they are not contiguous) coherently fit together to describe some common aspect or operation of the system, rather than being merely a set of disjointed clauses.
4. Confirm that the portion of the standard to which the claim elements are mapped is actually required for compliance with the standard. Some patents may map to optional parts of a standard, so showing that those parts are practiced requires additional effort.

Clearly, such a rigorous and time-consuming analysis cannot be properly performed within a matter of mere minutes, but instead requires a significant time investment for even a single claim. Based upon real-world experience, a proper analysis of a single claim would require a skilled practitioner to spend multiple hours, at a minimum, and potentially a day or more, to confirm that a patent claim is truly essential to a technical standard. An analysis performed in a matter of minutes, would be merely cursory and thus could not properly account for potential issues in claim terminology that would result from language usage in the patent specification or arguments made during prosecution that can negatively impact claim scope (*i.e.*, prosecution disclaimer).

However, the difficulty is not only in the claim mapping (and possibly preparation for assertion or litigation, which will be described in more detail below), but also in obtaining a patent that can actually successfully pass the above-described analysis. SEPs rarely (if ever) arise by accident; obtaining a SEP can require intense and expensive efforts by a highly trained and skilled team.

Mappings of patent claim elements against products or product specifications, such as industry standards, are typically documented in claim charts. The article “Assessing the Value of Your Patents” has a bold section title, “A Claim Chart Proves Patent Value,” that states “without a claim chart, a patent has little value” [11]. Perhaps it should be adjusted to read “without a carefully-crafted claim chart, a patent has little value.” It may be difficult, in some situations, to credibly propose that half an hour or less of effort can produce a carefully-crafted claim chart of patent claims against a standard for a complex technology, such as cellular communications or computer network protocols.

SEPs Can Be Valuable

Two of the primary reasons for a company to expend the expensive effort to obtain SEPs are [10]:

1. Cost reduction for patent portfolio cross-licensing; and
2. Licensing income.

For example, in a recent study on reasons that small and medium-sized enterprises (SMEs) registered IPR (not just SEPs), 45 percent indicated that it was for improved negotiating position, and 23 percent indicated it was for income [12]. Presumably, the response of preventing copying (79 percent) in that same study did not indicate motivation for SEPs, because SEPs derive value specifically from being practiced [10]. Bolstering the study on reasons for registering IPR, is an earlier study showing that nearly half (44 percent) of respondents described their methods of valuing patents as including cost savings, relief from royalty, and income [13].

Companies that participate in a standards-based industry are motivated to obtain SEPs to offset incoming value in patent portfolio licenses with competitors, because the competitors must take a license to the SEP. This feature of SEPs changes the dynamics of the licensing negotiation, relative to non-SEP feature patents, or “look-and-feel” patents that are often withheld from cross-licensing [10].

Quick Primer on Obtaining and Enforcing General Patents

For general patents, there are two primary phases: prosecution (*i.e.*, obtaining the patent) and assertion or enforcement (*i.e.*, litigating the patent). Patent prosecution requires practitioners, such as patent attorneys and agents, to obtain a special patent office registration. This often requires the practitioners to pass a test that demonstrates competency in a complex field of law.

During the prosecution phase, the attorney or agent drafts an application that contains multiple pages of text and illustrations, along with a set of special legally-significant sentences that define the specific coverage sought for the patent. These special sentences are the claims, and will become the primary source of value for any resulting patent.

The patent office may reject the application based on prior art documents (*i.e.*, earlier-dated documents showing the same or similar idea), and the attorney or agent will then argue for allowance. In many situations, the attorney or agent may also amend the patent claims to introduce new elements into the patent claims that are both:

1. Novel and non-obvious over the prior art found by the patent office; and
2. Supported within the originally-filed patent application specification (description).

In general, the more elements that are added to a

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patent claim while amending to overcome prior art, the more difficult it may be to later map all elements of the resulting claim to some accused product or system. Additionally, because the additional claim elements must be supported within the originally-filed patent application specification, the options for amending are typically constrained.

For non-SEP patents, the primary concern when amending the claims is obtaining allowance while still precluding easy design-around. Although it varies widely, the total effort required to amend claims and argue for allowance may be comparable to the effort required for initially drafting the application. Although a single amendment and argument cycle may be less, many patents require multiple amendment and argument cycles prior to allowance. Common time estimates for drafting patents, although heavily dependent on the complexity of the technology and the amount of disclosure, may be approximately 25 hours for some practitioners.

Preparing to litigate a patent, for anything beyond a nuisance case, requires significantly more effort than prosecution. Drafting solid claim charts for a patent on complex technology may require multiple hours, and that is after performing an analysis of the meaning of the claim element language. Patent assertion is a balancing act:

1. If the claim language is represented by the patent owner as having overly broad scope (in order to include the engineering description of an accused system), then the claim may be easily invalidated over prior art;
2. If, however, the claim language is represented by the patent owner as having overly narrow scope (to avoid invalidation over prior art), then it may not be possible to map the claim element language onto the engineering description of an accused system.

Without performing such a balancing analysis, prior to crafting a claim chart, the patent owner is risking a litigation loss. And this is even prior to factoring in additional complexities and time demands for crafting claim charts for SEPs.

Obtaining SEPs Can Require Multiple Times the Level of Effort

Companies that pursue SEPs may have dedicated teams of engineers that participate in standards setting organizations (SSOs) and invent improvements to proposed systems as the controlling standard is being developed. These engineers may work with a dedicated set of patent prosecution professionals who have experience with the unique demands of prosecuting SEP patents.

With SEPs, the patent prosecution process becomes significantly more complex. Recall the two prosecution

balancing considerations for general patents:

1. Novel and non-obvious over the prior art found by the patent office; and
2. Supported within the originally-filed patent application specification.

For a SEP, there is at least one additional factor to balance, simultaneously with the other two:

3. The claim elements can be mapped to a coherent portion of the standard (even if in separate locations).

Complicating matters further, consideration #1 (novelty and non-obviousness) may become quite challenging in a typical SSO environment, with representatives from multiple independent companies all sitting in the same SSO working group and each filing patent applications on their own attempts to solve the same problem. In patent prosecution of SEPs, the collection of relevant prior art can become quite crowded, leaving little room for novelty.

Perhaps most frustrating is that, as a draft version of a standard matures toward finalization, it can be subject to changes, often via change requests (CRs) submitted by competitors who may each be attempting to change the standard to fit their own related patent applications. Thus, whereas prosecution of general patents may be compared with trying to hit a fixed target (precluding easy design-around) from a moving platform (amending the claims) with constraints on options (supported within the original specification), prosecution of SEPs may be compared with trying to hit a moving target (the standard draft versions) from a moving platform with constraints.

This difficulty more than doubles the workload, perhaps tripling it or even more, in the experience of some practitioners. Some organizations respond to the added difficulties and demands by introducing a dedicated expert, in addition to the inventor/engineer and the patent practitioner. The expert needs to possess a high degree of skill in patent and technology matters, and simultaneously comprehend the legal language of patent claims and the complex language of a technical standard. The expert then creates and revises claim charts that map the current claims against the current version of the standard.

The charts may require updating whenever the claims or standard draft change, and—as a significant level of effort—the expert must be consulted by the patent prosecutor about all potential claim amendments (to overcome prior art) and test whether the proposed amendments can be mapped to the current draft of the standard. If the proposed amendment does not map, another one must be tested, with this iterated until a passing amendment is found, or the hoped-for SEP status is abandoned.

When arguing for allowance, patent claims may sometimes be limited in scope beyond specific amendments by prosecution disclaimer, which is when the patent prosecutor makes arguments that can be used later, by a litigation opponent, to attempt constricting the scope of the claim coverage. This reality dictates that the expert monitors the patent prosecutor's planned arguments, in addition to approving the wording of claim amendments.

Without this level of effort, just a single word in an amendment or argument, that does not fit within the technical teachings of the standard, can destroy hopes for an SEP. Over the course of prosecution (up through patent allowance) and standard development (up through finalization), an expert can easily spend 50 hours or more on the type of process described here, *for each patent*. Participation in this type of process, with an expert (other than the inventor) monitoring the prosecution, inspired the description of a "Top-Tier" patent prosecution process by the authors in [14].

Companies that have mastered a process such as this can produce a significant set of highly-valuable IPR that may provide sufficient value to justify the expense. Due to the global market for many standardized technologies, one good indication of a robust SEP program is an international prosecution strategy that includes multiple countries where the relevant standards are practiced. An international SEP patent portfolio can cost multiple times the cost for a general patent portfolio, of similar size, within only a single country.

Thus, there are notable risks in pursuing SEPs—including long delays prior to realizing a return on investment [15,6]. One proposed strategically-focused framework, that may be amenable to adaption for SEP portfolio growth by incorporating the Top Tier process described above and in [14], may be found in [16].

Enforcing SEPs Can Require Multiple Times the Level of Effort

Similarly to the way that prosecuting SEPs requires more effort than may be typical for general patents, enforcement of SEPs also requires more effort, additional roles, and often, more acute demands on skills in critical areas. As described above for a general patent assertion, claim charts are required that balance claim scope to include the accused system, without also bringing in prior art.

Because, for the reasons described above, the prior art field for SEPs can be highly crowded in some technologies, the balancing act is quite often more constraining: The scope of the legal language of the claims must include the equivalent technical language for the mapped portions of a standard, but it must simultaneously avoid prior art by other inventors who were attempting to solve the same problem at approximately

the same time, within the narrow constraints that the solution must function within the system specified by the standard. That is, narrow design options all being considered by talented engineers around the same time.

Attempting to scope the claims under this situation, in order to properly map them in a claim chart, requires careful analysis by skilled experts. Thus, it is common in SEP litigation to have specialized experts who simultaneously understand all of:

1. The underlying technology;
2. The standard drafting process;
3. How to navigate among the different inter-related sections of the standard;
4. How to interpret the peculiar language and terminology used within the standards;
5. How to interpret a patent specification and figures, to identify the likely meaning of the claim terminology; and
6. How to interpret the legal language of patent claims, as defined by the trial court in a claim construction order.

This set of skills can be difficult to locate for some technologies—and priced accordingly.

The litigation expert must be ready to defend against a myriad of attacks on the patent, which may include:

1. Invalidity;
2. Non-infringement as a result of the claim language not mapping to the standard language;
3. Non-infringement as a result of the prosecution disclaimer limiting the scope of the claim language; and
4. Non-infringement as a result of *ad hoc* mapping of claims elements to unrelated sections of standard, rather than a coherent set of passages that together all describe some common aspect or operation of the system.

A quick breeze through an overly optimistic claim chart analysis and drafting process simply cannot be close to adequate. A solid analysis requires dozens of hours per patent, in the experience of some practitioners. The expert may also need to budget time to consider "home court advantage" in some multi-national patent infringement actions.

True SEPs Versus Standards Body Declarations

The effort described above for litigating patents is far beyond the effort needed to identify patents subject to SSO disclosure obligations. The threshold difference is stark: Some SSO participants have an obligation to "disclose every specific patent which *might* be essential to a specific specification ..." [17]. (emphasis added) These patents and applications can be of poor quality and declarations may not even require any mapping to be performed at all.

The analysis necessary for a cursory (probably optimistic) determination of whether to declare a patent to a standards body (as a potential SEP) may be made, by properly skilled people, in perhaps as little as half an hour or so. Different companies exercise different degrees of care in making their mappings. Given the popularity of using proportionality in setting SEP royalty rates (see [18]), some companies may perceive a financial incentive to over-declare patents that have not been (or could not be) properly charted against the relevant standard. A standards body declaration, therefore, should not be confused with a patent actually being a SEP.

Even if a declared patent is of solid quality, and does map well to a standard, it may only map to an optional portion of the standard. That is, there are sections of some standards that some industry participants may not actually practice—and yet may still claim compliance with the standard.

Another potential misstep in mapping possible SEPs to a standard is the possibility that the mapped portions correspond to devices or systems supplied by different parties (*i.e.*, the mapping of the claim to the standard results in divided infringement, that in the U.S., anyway, may preclude a finding of infringement against the supplier of only one portion of the mapped standard). This is a particular risk in standards for systems that describe interoperability of different nodes on a network. Thus, the patent owner cannot simply rely on a mapping to the standard, but has the additional burden of showing that the mapped portion(s) of the standard are actually practiced by a particular accused system or device.

The Role of Independent Experts in Evaluating a Potential SEP

Apart from hiring one's own expert to assist with prosecution and litigation tasks, there is also an emerging role for independent experts to evaluate claims of essentiality. This can screen out at least some overly-optimistic self-declarations by the patents' owners. This issue is receiving high-level attention in Japan, with this March 2018 announcement by the Japan Patent Office (JPO):

We will implement the new operation of the advisory opinion system to determine standard essentiality from April 1 2018. After the thorough consideration, the “Manual of ‘Hantei’ (Advisory Opinion) for Essentiality Check” is now available to users prior to the implementation of the new operation. [19]

The referenced manual is available on the JPO website [20]. Nearly coinciding with that announcement, was the placement on the JPO website of a presentation by a major Japanese consumer electronics company that stated “It is important ‘who’ judges the essentiality of [an] SEP” [21].

The skills needed for the independent assessment expert to differentiate between true SEPs and overly-optimistic self-declarations are described above, and include not only the ability to thoroughly understand the technical subject matter (high technical skill), but to simultaneously reliably predict how claim language is likely to be interpreted by a court in a hypothetical patent infringement litigation (specialized legal skill). Additionally, an unbiased and fair assessment is critical to avoid unfairly burdening either the patent owner or potential licensees.

One of the primary advantages for independent SEP evaluation experts is that self-declared SEPs can be analyzed in a setting that is far less expensive than litigation. Potential licensees can obtain the benefit of a review by someone who lacks the financial incentive for a particular outcome of an essentiality analysis, and patent owners with true SEPs may have an easier time convincing potential licensees. This is a positive for companies that attempt to grow SEP portfolios via the careful (and expensive, and time-consuming) prosecution process described above. Their efforts are more likely to be met with agreement on a patent's essentiality by an independent expert. In stark contrast, patent trolls, who allege essentiality for lower-quality patents and rely upon the high cost of litigation to delay an actual “trial by fire” in a full-blown claim construction battle, may find themselves disadvantaged by an independent assessment that undermines allegations of essentiality.

Although the amount of work would be substantial, additional value for patent owners and licensees might be achieved if, in addition to ascertaining essentiality, the independent expert additionally opined on the likelihood of a subject SEP's validity over:

1. Prior versions of that same standard;
2. Earlier-dated CRs from other SSO participants; and
3. Prior standards (and their CRs) for other standards than might involve similar technical concepts.

Such a task, however, may be prohibitively expensive without a sufficient funding source. Studying all of the nearby documentation that could be relevant to the patentability of an invention introduced in a CR in an SSO is an intensively time-consuming task.

Leveraging a SEP Program

After working past all the obstacles, once a company has obtained one or more SEPs, either by home-grown prosecution or by acquisition, the SEPs may be leveraged to cut outbound licensing payments below the royalty rates that are published by some companies with large SEP portfolios (see the table on page 116 of [18]). (See also the section “SEPs Can Be Valuable.”) In a typical SEP licensing negotiation, a large SEP holder may open with the published rates as a starting po-

sition, much like the MSRP window sticker at many automobile dealer lots [22]. But these rates are optimistic asking prices, and do not reflect incoming value from a cross-license in which the other party also has some SEPs.

For example, consider the scenario in which two companies that each have published rates are negotiating a cross license. Would one suspect that they merely compare the published rates, and the company with the higher published rates collects the difference (of the rates) from the other? It is not that simple, in practice.

Primary considerations include how good each side's patent portfolio may be, in terms of both size and quality. For example, if one side has more solidly-mapped claim charts, and the other side has weak, overly-optimistic claim charts, then the dynamic of the negotiation is likely to favor the party with the better claim charts. That company will likely have the upper hand during the negotiations, and can extract a better deal for itself. Note the comments in [22] that "These are often serious discussions that take place over numerous meetings among patent attorneys and technical experts, who analyze the patent claims and products in laborious detail."

This is why solid, properly-prepared claim charts are so important. The fact that some charts exist has far less significance than whether the charts can withstand intense scrutiny by a determined opponent with a team of highly-skilled professionals who will attempt to discredit them. In some negotiations, each side brings claim charts for its best set of patents, perhaps up to a few dozen. Either the negotiations may proceed while someone is studying the charts, or perhaps there may be a break in the negotiations to permit each side to study the other's charts and then reconvene. According to [23]:

It can take months or years to negotiate a patent license and, as anyone who has sat through a long afternoon discussing claim charts knows, parties cannot discuss thousands or even hundreds of patents in detail if they hope to reach an agreement within a reasonable amount of time. As such, the parties generally agree to discuss a subset of representative patents from the whole portfolio. Depending on the size of the portfolio and patent holder, this may be anywhere from 20 to 100 individual patents.

See also page 2 of [21] stating "For many reasons, we may need [a] long term to negotiate."

The agreed-upon terms, such as how much the junior IPR-holder pays, is a combination of multiple factors. Even companies that publish rates may take discounts

on those rates for an up-front lump sum. The factors involved in determining the final terms may include:

1. What SEPs each side has (how many, how important is the underlying technology to the standard, and how well do they withstand scrutiny?) [21];
2. How much each side's negotiating team knows about actual industry rates (has the team negotiated with many other large portfolio owners?);
3. How willing each side may be to break off negotiations and actually litigate (what is their confidence in their own stated position?); and
4. The introduction of "negotiation modifiers" into the process.

The factor of how willing each side may be to actually litigate can be heavily driven by the company's risk tolerance and ability to afford litigation, but also the quality of the claim charts—their own and those of the opposing side. *At this point, a consistent theme should be apparent: a SEP derives value from a high-quality claim chart.* Hastily-crafted, overly-optimistic claim charts cannot give a patent the same value as a true SEP that can withstand dedicated attack by skilled technical experts. In some situations, it may be cost effective to purchase an SEP that is well-known and highly-regarded within an industry, and use that to reduce outbound licensing costs during the years required to grow a SEP portfolio through patent prosecution. This is when the short-cuts of the prosecution phase can come back to haunt a company, or all that extra (expensive) effort during prosecution, as described above, can pay off.

One example of a negotiation modifier can be seen from the following scenario of portfolio fracturing, experienced first-hand by the author. When negotiating for a patent portfolio cross-license, the opposing side announced an upcoming deadline for a deal with a five (5) year term. Then the opposing side announced the divestment of thousands of patents, including some SEPs, to non-practicing entities (NPEs). The terms of the divestment were that, if the patent portfolio was licensed by the deadline, the license would flow down to the NPEs for the term of the cross-license. However, if the license was not signed by the opposing side's announced deadline, a myriad of patent infringement suits could be expected from the NPEs. This would predictably drive up long-term licensing costs.

To handle the process properly, the negotiating team should have some specific skills and expertise, such as knowledge of industry-wide trends and rates actually paid (which, as described above, can differ from published rates). Knowledge of rates actually paid can be valuable, as such information is heavily-guarded and publication is exceptionally rare [24]. Another desirable skill to bring along with the negotiating team may

include a combination of detailed knowledge of the company's product offerings and operation with the ability to rapidly read a patent and properly understand how the claim language is likely to be interpreted in litigation. This is because some companies may attempt to introduce a surprise patent during the negotiations that appears to be formidable to most patent licensing negotiators. The ability of the team to rapidly dissect the patent and announce why it is not a threat—during the negotiations—can affect the dynamics of the discussion and improve bargaining position.

SEP Program Summary

Several issues to consider were described herein for designing a SEP program for patent portfolio growth. A true SEP is a patent having at least one novel and non-obvious patent claim—not just the patent's teaching, but specifically a claim—that maps to a coherent portion of a standard that is actually practiced, using the properly accurate definitions for the words in the patent claim language. Determining whether a patent is truly a SEP has multiple aspects; the analysis cannot be properly performed within a matter of mere minutes, but instead requires a significant time investment. Standards body declarations should not be confused with a patent actually being a SEP.

SEP can derive their value by offsetting incoming value in patent portfolio licenses with competitors because the competitors must take a license to the SEP. Prosecuting and litigating SEPs requires more effort, additional roles, and often, more acute demands on skills in critical areas than may be typical for general patents. Processes were suggested to use for the required efforts to obtain and enforce SEPs, and some licensing considerations were also described. ■

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The opinions expressed herein are those of the author only, and do not necessarily reflect the views of any of the author's employers.

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