

Treatment of Utility Models as Standards-Essential Patents^{*}

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Utility models (UM) are not patents, yet in some cases they may be treated like patents. One such case is the declaration of UM as “essential” to industry standards such as Wi-Fi and 5G, and the attendant licensing of these UM to the manufacturers of standardized products on terms that are “fair, reasonable and nondiscriminatory” (FRAND) under the rules of the relevant standards-development organization (SDO). This chapter explores the prevalence and implications of declaring and licensing UMs as standards-essential patents.

18.1 STANDARDS-ESSENTIAL PATENTS AND UTILITY MODELS

18.1.1 *FRAND Licensing Commitments*

Some technical standards, particularly in the telecommunications and computing sectors, can be covered by hundreds or thousands of patents.¹ Accordingly, SDOs often require their participants to disclose patents believed to be “essential” to the implementation of a standard (standards-essential patents, or SEPs) to other participants in the SDO prior to approval of the standard. This obligation is intended to allow SDO members to work around or avoid any patent that could unduly impair the broad adoption of the standard.² SDO participants that fail to disclose SEPs when so required by an SDO’s policies can be found to have breached the SDO’s policy or to have engaged in deceptive or anticompetitive conduct.³

^{*} Portions of this chapter are adapted from Jorge L. Contreras and Magnus Buggenhagen, *Standards Essential Utility Models*, 64 *Jurimetrics J.* 1 (2024).

¹ Baron and Pohlmann 2018.

² National Research Council 2013, 73.

³ U.S. Dept. Justice & Federal Trade Comm’n, 2007, 43–45.

Furthermore, in order to promote broad adoption and use of their standards, most SDOs also require that participants license their SEPs to the manufacturers of standardized products (“implementers”) on terms that are either royalty free or bear royalties that are “fair, reasonable and non-discriminatory” (FRAND).⁴ This obligation is intended to assure implementers that they will be able to incorporate widely adopted standards into their products without the threat of being sued by the holders of SEPs.

18.1.2 *Essentiality*

A SEP holder’s obligations to disclose and grant licenses generally applies only to patents that are “essential” to the implementation of the standard. That is, a product implementing the standard will necessarily infringe the claims of the patent.⁵ Despite the importance of the concept of essentiality to the value of patents covering standardized products, the essentiality of a particular patent to a particular standard is usually determined unilaterally by the patent holder without external verification.⁶ Yet this decision is often made with incomplete information at a time when the patent in question may still be in prosecution and the standard is not yet finalized.⁷ As such, the declaration of a patent as a SEP often constitutes a best guess by the SEP holder as to the likely essentiality of an issued patent, or a patent application, to a draft or published standard.

Not surprisingly, given the potential royalty revenue that may be earned from SEPs, and the potential liability that can arise under the antitrust and competition laws from the *failure* to disclose SEPs in compliance with an SDO’s policies, SDO participants have often erred on the side of over-declaration of SEPs in relation to many standards.⁸ For this reason, the essentiality of declared SEPs to particular standards is frequently challenged in litigation, with the result that some patents asserted against products implementing standards as to which they were declared essential are found to be neither essential to the standard nor infringed by the product implementing the standard.⁹

⁴ See Lemley 2002.

⁵ There are a few different variations of the “essentiality” definition, including some that are based on the “technical” essentiality of the patent in question (whether any product implementing the standard will infringe as a technical matter) versus “commercial” essentiality (whether any commercially viable product will infringe). See Contreras 2017b.

⁶ Contreras 2017b.

⁷ Contreras 2017b.

⁸ For example, in one frequently cited series of studies, only 28%, 29% and 50% of patent families declared “essential” to the 2G, 3G and 4G wireless telecommunications standards, respectively, were assessed by an independent reviewer to be essential to the implementation of those standards. Contreras 2017b, 224–225.

⁹ See Lemley and Simcoe 2019.

18.1.3 *Injunctive Relief and SEPs*

One of the typical remedies available to a patent holder upon proving infringement is a court-ordered injunction preventing the infringer from continuing to make or sell infringing products. The availability of injunctions when SEPs are infringed has been the subject of considerable debate, as the general availability of the injunction remedy can be seen to conflict with the SEP holder's commitment to grant licenses to all implementers of the standards covered by the SEPs.¹⁰ As a result, the availability of injunctive relief when SEPs are infringed by an unlicensed implementer varies by country, and may depend on applicable competition law as well as a determination whether the infringing implementer is "willing" to accept a license on FRAND terms.¹¹

18.1.4 *Utility Models as Standards-Essential*

In addition to patents, some SDO policies require SDO participants to disclose UMs as potentially essential to implement their standards. This requirement is made explicit, for example, in the *Guidelines for Implementation of the Common Patent Policy* of the International Telecommunications Union (ITU), International Organization for Standardization (ISO) and International Electrotechnical Committee (IEC), which defines a "patent" as including "those claims contained in and identified by patents, utility models and other similar statutory rights based on inventions (including applications for any of these)".¹² Other prominent SDOs, including the European Telecommunications Standards Institute (ETSI), the Internet Engineering Task Force (IETF) and the HDMI Forum, also expressly require the disclosure or licensing of UMs that are believed to be essential to a standard.¹³

While the policies of some SDOs expressly mention UMs, the policies of other SDOs, including ATSC¹⁴ and JEDEC,¹⁵ do not, and instead apply their disclosure and licensing requirements only to "patents". At these SDOs, it is not clear what

¹⁰ See Baron et al. 2023; Contreras et al. 2019.

¹¹ See Contreras et al. 2019.

¹² Int'l Telecommunications Union, Int'l Org. for Standardization, Int'l Electrotechnical Comm., *Guidelines for Implementation of the Common Patent Policy for ITU-T/ITU-R/ISO/IEC* (November 2, 2018) at 2.

¹³ See Bekkers and Updegrove 2013, 54 (listing utility model requirements of major SDOs), Contreras et al. 2022 (noting "catch all" term that includes utility models in SDO disclosure policies).

¹⁴ Advanced Television Systems Committee, Inc., *Patent Policy – Document B/04* at § 11.b (December 13, 2007) ("'Essential Claim' means claims of all patents issued, and patent applications filed, under the laws of any country that are necessarily infringed by implementing the normative portion of a Specification Document").

¹⁵ JEDEC, *JEDEC Manual of Organization and Procedure* § 8.2.1 (December 2022) (defining "Patent" as "All classes or types of patents other than design patents (including, without

effect the disclosure of a UM under the SDO's disclosure or licensing policies would have, and whether the FRAND or other licensing commitments of the SDO apply to UMs. Conversely, it is not clear whether an SDO participant's failure to disclose a UM would constitute a violation of such an SDO's disclosure policy or deceptive conduct that is otherwise actionable. The implications of this definitional gap are considered more fully in Section 18.3.1.

And while commentators have casually observed that UMs have infrequently been disclosed as essential to technical standards,¹⁶ there has not, until this study, been an empirical assessment of the rate at which UMs are declared to be essential. With the caveat that, just as with patents, a declaration to an SDO that a UM is believed to be essential to the implementation of particular standard is not an assurance that the UM will ultimately be found to be essential, this chapter refers to such declared UMs as "standards-essential utility models" (SEUMs).

18.2 FINDINGS: STANDARDS-ESSENTIAL UTILITY MODELS

18.2.1 Methodology

This study utilized data on UM filings around the world provided by the World Intellectual Property Organization (WIPO)¹⁷ as well as the IPLytics platform (now a part of Lexis-Nexis).¹⁸ As an official United Nations organization, WIPO makes available filing data from the patent offices of its 193 member states.¹⁹ The IPLytics database includes patent and UM filing data from 98 national and regional patent offices.²⁰ IPLytics also contains SEP declarations made at 35 different SDOs and 11 patent pools, including disambiguated information regarding SEP declarants, as well as information (sourced from Darts IP) concerning SEPs that have been litigated.²¹ These databases were queried between March and May 2023. Separately, detailed information regarding litigated SEUMs was sourced from Darts IP.

limitation, originals, divisions, continuations, continuations-in-part, extensions or reissues), and applications for these classes or types of patents throughout the world.")

¹⁶ See, e.g. Bekkers and Updegrove 2013, 54.

¹⁷ WIPO 2023d.

¹⁸ <https://platform.ipltics.com>

¹⁹ WIPO 2023e (updated as of February 2023 at time of search).

²⁰ IPLytics, IPLytics Platform Data Sources 5. Most countries that issue UMs do not provide for the multiple continuations and divisional applications that are available for patents, further limiting the set of related UMs that might be viewed as belonging to the same "family". Accordingly, it is not apt to refer to UMs filed in different jurisdictions as belonging to the same "family" in the same manner as patents.

²¹ The IPLytics database, which we utilized in this study, does not distinguish between litigation in judicial proceedings and validity challenges at patent offices and other administrative tribunals.

18.2.2 Findings: Standards Essential Utility Models (SEUMs)

18.2.2.1 Technical Content of SEUMs

As discussed elsewhere in the volume, UMs may cover anything from very simple mechanical designs to complex technological systems. In the case of SEUMs, the technical complexity of claimed inventions tends toward the more complex, given that most standardization activity in which patents and UM are filed occurs in the information and communications technology (ICT) sector in which products are largely electronic and software-based. As a result, the technical descriptions and claims contained in most SEUM documents are largely indistinguishable from those contained in patent documents.

18.2.2.2 SEUM Declarations

In considering SEUMs, it is important to recall that a single UM (like a single patent) may be declared as potentially essential to different standards and different versions of the same standard.²² Thus, when considering standards-essential patents (SEPs), from 1990 to 2022, approximately 5.9 million individual SEP declarations have been made across all SDOs tracked by IPLytics, covering approximately 500,000 unique patents (counted by declaration year). The number of SEUMs is far lower. During the same period, approximately 7,700 SEUM declarations corresponding to 947 unique UMs were identified, representing approximately 0.2 percent of all SEP declarations.

Figure 18.1 shows total SEUMs by year of UM issuance and year of first declaration. Declarations can be made years after a patent is issued (e.g., in response to a “call for patents” made when a draft standard is submitted to the SDO for approval²³), explaining why declarations appear to be weighted toward later years. Yet as shown in Figure 18.1, there does not appear to be a discernable trend in SEUM declarations over time, either increasing or decreasing.

18.2.2.3 Geographic Distribution of SEUMs

A total of 946 SEUMs were declared across a total of fourteen jurisdictions between 1990 and 2022.²⁴ Data regarding each jurisdiction in which SEUMs were declared during this period, compared to overall UM filings and SEP declarations in these jurisdictions, is contained in Supplemental Data Table 2.

²² Moreover, some SDOs (such as IEEE, responsible for the pervasive Wi-Fi standards) do not require the declaration of specific SEPs but instead permit participants to make “blanket” commitments to license all patents/UM that they hold on specified (i.e., FRAND or royalty-free) terms. These patents/UMs, while potentially numerous, are not included in these data.

²³ See Contreras et al. 2022.

²⁴ Excludes five apparently spurious/erroneous UM declarations arising from what appear to be errors in declaration documents filed with the ATSC SDO.

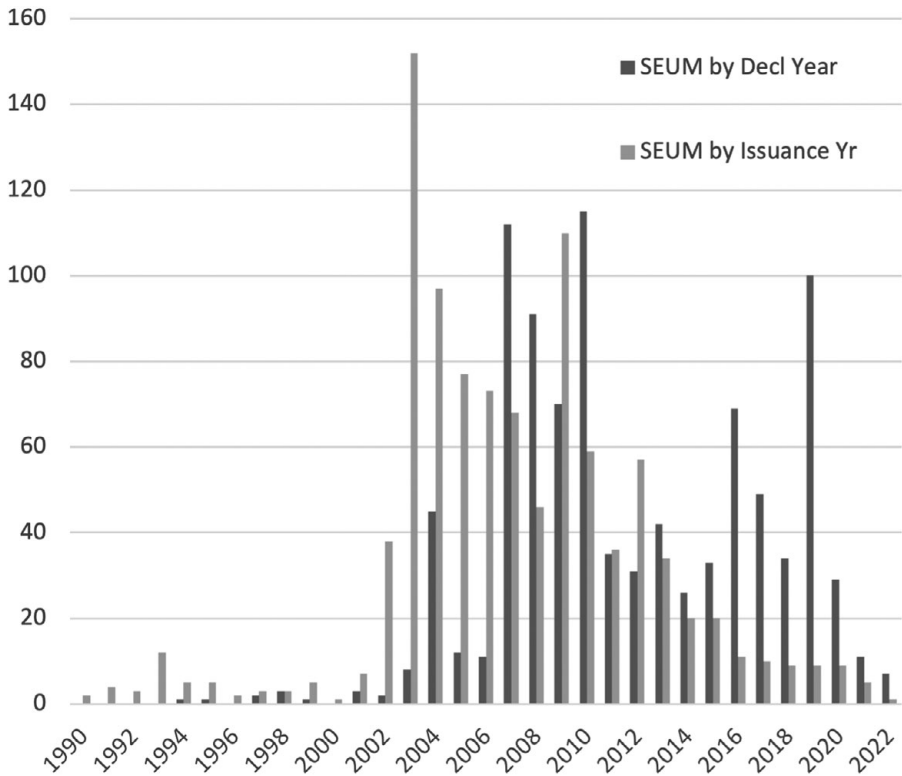


FIGURE 18.1 SEUM filings by year

Figure 18.2 illustrates the distribution of SEUMs among jurisdictions, which varies significantly both from that of all UMs generally and that of all SEP declarations. First, the number of SEUMs is considerably lower than the total number of declared SEPs in those jurisdictions.²⁵ SEUMs make up the highest portion of SEPs in Germany (4.26 percent) and Taiwan (2.05 percent). This percentage approaches zero in most other jurisdictions, with six or fewer SEUMs declared in all but the top five jurisdictions.²⁶

Perhaps the most notable divergence among filing rates of SEUMs, SEPs and UMs within a jurisdiction can be seen in China, which has by far the greatest number of UMs worldwide (97.6 percent). While patents issued by China have been declared as SEPs more than patents issued by any other country in this study,²⁷ the total number of Chinese SEPs exceeds that of Japan and Korea by only a factor

²⁵ Note that total SEP figures include SEUMs.

²⁶ While UMs filed in different jurisdictions may be, and likely are, related to the same or similar inventions, they are not readily identified as belonging to the same “family” in the same manner as patents.

²⁷ Data from countries, such as the US, that lack UM systems is not included. From 1990 to 2022, 102,663 U.S. patents were declared as SEPs.

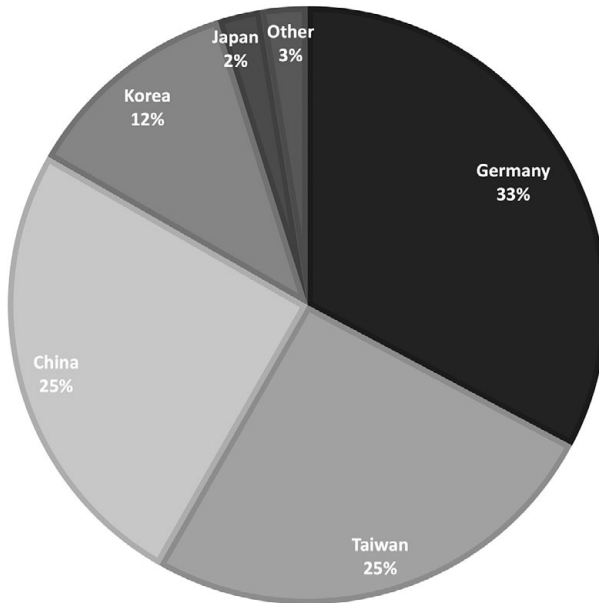


FIGURE 18.2 Share of SEUM declarations by jurisdiction, 1990–2022

of two. Of Chinese SEPs, only 237 are SEUMs (0.32 percent), placing China behind both Germany and Taiwan in terms of SEUM declarations and behind Germany, Taiwan, Ukraine and France in terms of the percentage of UMs that are declared as SEUMs. Moreover, given China's huge number of UMs (nearly 20 million), the percentage declared as SEUMs is vanishingly small. These results reinforce the notion that the Chinese UM system is largely oriented toward local manufacturing of simple products and not toward the type of sophisticated international technology development that occurs within SDOs. Nevertheless, Chinese UMs are still declared as SEUMs more than UMs from any countries other than Germany and Taiwan. Thus, even though representing a small percentage of China's overall UM volume, the number of Chinese SEUMs is significant.

18.2.2.4 SEUM Declarants

Unlike ordinary UMs, which have applicants from a broad cross-section of industries and geographies, the majority of SEUM declarations have been made by a single firm: US-based InterDigital, which held 613 of a total 985 declared SEUMs (61 percent) from 1990 to 2022. Figure 18.3 shows the number of declared SEUMs held by declarants of ten or more SEUM during this period (with full data in Supplemental Data Table 3).

As shown in Figure 18.3, InterDigital, based in the US, has been the most prolific declarant of SEUMs by a wide margin. Yet InterDigital's SEUM filing and declaration program is of largely historical interest. Representatives of InterDigital note

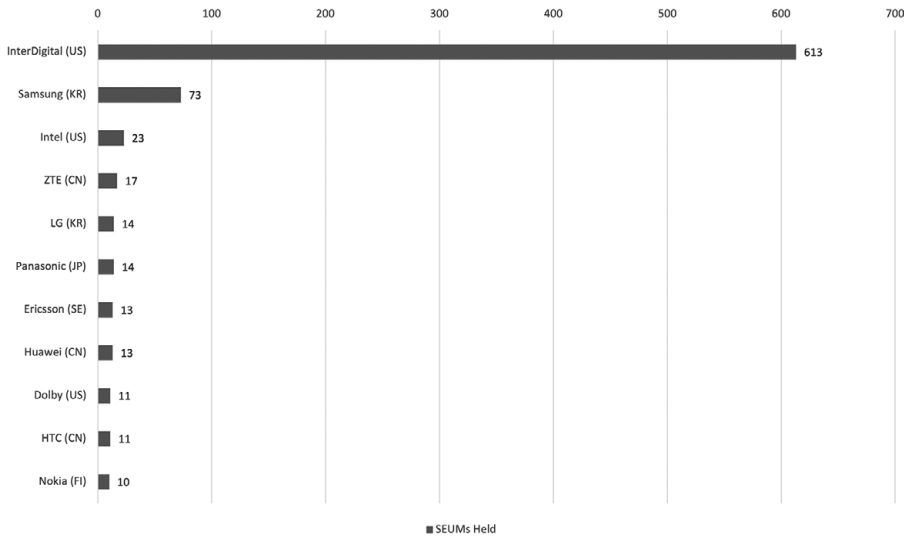


FIGURE 18.3 Top SEUM declarants, 1990–2022

that the company filed numerous UMs between March 2001 and January 2012, with the volume decreasing substantially beginning in 2009.²⁸ As of July 2023, InterDigital claims that it holds no active UMs.²⁹

In addition to InterDigital, the top eleven SEUM filers include two other US firms, Intel and Dolby Laboratories, despite the fact that the US does not itself have a UM system. This observation suggests that firms such as these operate strategically across borders, irrespective of the rights offered by their home jurisdictions.³⁰ The other top SEUM holders originate from Korea (Samsung and LG), China (ZTE, Huawei), Taiwan (HTC), Japan (Panasonic), Sweden (Ericsson) and Finland (Nokia). Each of these jurisdictions has a UM system.

Below the top eleven firms, 123 additional firms from a range of countries held between 1 and 7 SEUMs each, with a total of 173 SEUMs among them. This “long tail” suggests that, other than InterDigital during the early 2000s and, possibly, some of the other top SEUM filers, firms involved in standardization have not developed a concerted strategy of filing UMs or declaring SEUMs at SDOs, resulting in SEUM declarations that are for the most part sporadic and nonpurposive.

While the absolute number of SEUM declarations made by individual firms may allow conclusions to be drawn about firm strategy, additional insight can be gained by comparing SEUM declarations with SEP declarations made by these firms. Accordingly, Figure 18.4 compares the SEUM declarations made by the top

²⁸ Email correspondence between the author and Jim Harlan, InterDigital, July 25, 2023 (on file with the author).

²⁹ Ibid.

³⁰ See Cahoy and Oswald (2021) and Chapter 19 regarding firm strategy concerning UM filing.

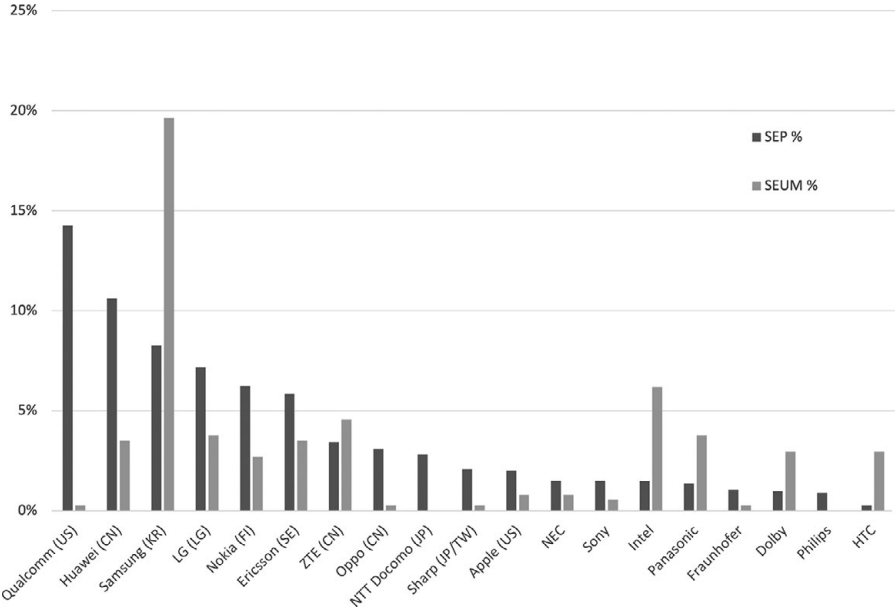


FIGURE 18.4 Comparison of SEP and SEUM declaration shares by Top SEUM declarants (excluding InterDigital), 1990–2022

SEUM declarants (excluding, for purposes of presentation, InterDigital³¹) with SEP declarations by those firms and other “top” SEP declarants, in each case based on the percentage that such firms’ declarations represent of all SEUM and SEP declarations.

Interestingly, there appears to be little correspondence between the percentage of SEP and SEUM declarations made by any given firm. Most striking is InterDigital (omitted from Figure 18.1 to delineate the shares of other firms more clearly), which declared 613 of 985 SEUMs (62 percent) but only 21,404 of 502,717 SEPs (4.3 percent). As shown in Figure 18.1, Samsung, Intel, Panasonic, Dolby and HTC follow a similar pattern, accounting for a much larger share of SEUM than SEP declarations. In contrast, firms such as Qualcomm, Huawei, LG, Nokia, Ericsson, Oppo, NTT Docomo, Sharp and Apple were responsible for a much larger share of SEP than SEUM declarations.

18.2.2.5 Jurisdictional Choices by SEUM Declarants

The jurisdictions in which SEUMs are issued does not correspond to the national origin of their declarants, nor follow any discernable pattern at all. Table 18.1 shows

³¹ InterDigital is excluded from Figure 18.3 to avoid its graphical “swamping out” the distinctions among other SEUM declarants.

TABLE 18.1 *Jurisdictions of SEUMs filed by top filers, 1990–2022*

	InterDigital	Samsung	Intel	ZTE	LG	Total
Taiwan	228					228
China	201		9			210
Germany	105	66	13	9	9	202
Korea	79	6			5	90
Japan		1				1
France			1			1
Denmark				5		5
Hungary				2		2
Finland				1		1
Total	613	73	23	17	14	740

the countries in which declared SEUMs have been issued for the top five SEUM holders.

Perhaps the only general conclusion that can be drawn from Table 18.1 is that most large holders of SEUMs declared German SEUMs. Despite China's significant share of all global UMs, only InterDigital and, to a lesser degree, Intel, have declared SEUMs issued in China.

Curiously, ZTE, a large Chinese handset manufacturer, has declared no SEUMs issued in China, but is the declarant of the only SEUMs issued by three smaller European jurisdictions (Denmark, Hungary and Finland). While Finland, the headquarters of Nokia, can potentially be explained for this reason, there is no obvious explanation for ZTE's interest in Denmark or Hungary, and, again, this declaration pattern must be attributable to ZTE's unique business objectives and strategies.

In short, these data reveal a highly idiosyncratic pattern of SEUM declaration across firms, which is likely driven by individual firm strategies.³²

18.2.2.6 SEUMs and SDOs

SEUMs have been declared across a variety of SDOs. Table 18.2 shows the SDOs at which SEUMs have been declared from 1999 to 2022 across the top five UM filing jurisdictions.

Not surprisingly, the “xG” series of wireless telecommunications standards developed under the aegis of ETSI, which are documented as having the largest number of SEP declarations,³³ also have the most SEUMs declared against them. Yet several other SDOs also have declared SEUMs. ATSC, ITU-T and JEDEC

³² Such idiosyncratic UM strategies were also observed by Cahoy and Oswald with respect to the automotive industry and its pursuit of UM. See Cahoy and Oswald 2021, 568.

³³ See Baron and Pohlmann 2018.

TABLE 18.2 SDOs in which SEUMs are declared, 1999–2022

SDO	China	Germany	Japan	Korea	Taiwan
ANSI	1				1
ARIB		1	2	1	
ATSC	7	22	4	7	7
Blu-Ray		1			
ETSI	220	281	13	111	226
IEC	1				
IEEE		1			
IETF			1	1	1
ISO		3			
ITU-T	1	9	1	1	2
JEDEC	7	6	1	2	4
OMA		1			
SMPTE				1	
WPC		1			

include declared SEUMs from each of the top 5 SEUM jurisdictions, while nine other SDOs have a handful of SEUM declarations.

Moreover, individual firms choose which SDOs to participate in based on their own product offerings and research programs. Thus, firms primarily engaged in wireless telecommunications and heavily involved in standardization at ETSI would not necessarily participate in JEDEC, which focuses on semiconductor memory devices.

18.2.3 SEUMs in the Judicial System

SEPs can give their owners significant leverage in the negotiation of licensing agreements, in part, because SEPs can be enforced in court against unlicensed implementers. Depending on the jurisdiction, a court may award a SEP holder that successfully enforces its SEP against an unlicensed implementer monetary damages and fee awards and may also enjoin the implementer from further manufacturing or selling standards-compliant products.³⁴ In recent years, there has been a significant amount of SEP- and FRAND-related litigation. One 2023 study commissioned by the European Commission identified more than 1,000 reported judicial decisions involving FRAND issues around the world between 2009 and 2021.³⁵ Another recent study found that in the US, disclosed SEPs are more than five times more likely than non-SEPs to be litigated.³⁶ Litigation of SEPs is thus a significant feature of the standards-setting environment.

³⁴ Contreras et al. 2019; Lemley and Simcoe 2019, 610.

³⁵ Baron et al. 2023, at 71, fig. 13.

³⁶ Bekkers et al. 2023, 7, table 4.

In addition to enforcement litigation, the validity of SEPs can be challenged in judicial and administrative proceedings around the world (e.g., oppositions at the European Patent Office and *inter partes* review proceedings at the US Patent Trials and Appeal Board). We are unaware of statistics regarding the total number of such challenges, though Lemley and Simcoe recently studied validity rates of SEPs challenged in US litigation.³⁷

The frequency with which SEUMs are enforced or challenged in administrative proceedings (which, for the sake of convenience, we refer to as “litigated”), however, has not been studied. This section provides initial descriptive statistics concerning litigation and challenge of UMs and SEUMs.

18.2.3.1 Litigated Utility Models

From 2000 to 2022, we identified approximately 30,000 UMs that were the subject of judicial proceedings, including both administrative challenges and court litigation.³⁸ These figures do not include UMs that were subject to arbitration proceedings. As shown in Table 18.3, litigated UMs can be found across a wide range of jurisdictions, from large, developed economies to small and developing ones.

Consistent with its position as the leading jurisdiction in terms of overall UM filings, China is also the site of the greatest number of UMs subject to litigation (69.5 percent). This being said, this share is significantly lower than China’s share of overall UM filings during this period (95.6 percent). As such, China appears to have a somewhat lower rate of litigation than other jurisdictions.

Other jurisdictions in which large numbers of UMs are filed (i.e., Germany, Japan, Russia, Korea) also lead the rankings for litigated UMs. Nevertheless, there is a “long tail” of jurisdictions in which UMs are litigated but relatively few UMs have been issued. For example, Finland, with 79 litigated UMs, ranks 13th in terms of litigated UMs, but only 23rd in terms of overall UM filing during the period. Moreover, some jurisdictions that rank fairly high in terms of UM issuance (e.g., Australia, France, Philippines) have very little UM litigation, and Thailand, Mexico and Hong Kong, which ranked 11th, 17th, 19th, respectively, in terms of UM issuances during the period, had no reported UM litigation during the period.

A wide range of parties have been involved in UM litigation, with no individual party holding more than 0.2 percent of total UMs subject to litigation (either as the

³⁷ Lemley and Simcoe 2019, 627 (finding that, in their sample of 49 U.S. cases, SEPs were found valid 83.7 percent of the time).

³⁸ The IPLytics database, which we utilized in this study, does not distinguish between litigation in judicial proceedings and validity challenges at patent offices and other administrative tribunals. Moreover, some jurisdictions whose sub-patent systems are referred to by names other than “utility models”, such as the now-discontinued “registration patents” in the Netherlands, are not identified by IPLytics as UMs, even though such rights may have been subject to significant litigation activity.

TABLE 18.3 *Jurisdictions where utility models were litigated, 2000–2022*

Jurisdiction	Litigated UMs	Jurisdiction	Litigated UMs
China	21,018	Peru	22
Germany	2,589	Chile	21
Japan	1,377	Austria	14
Russia	1,292	Bulgaria	14
Taiwan	1,213	Colombia	13
Korea	911	Hungary	11
Brazil	512	Australia	6
Turkey	341	France	6
Czech Rep.	257	Philippines	4
Spain	249	Costa Rica	4
Italy	101	Estonia	4
Poland	97	Argentina	3
Finland	79	Romania	2
Denmark	36	Greece	1
Slovakia	36	Moldova	1
Ukraine	25	Portugal	1

plaintiff or defendant). Of the 20 firms holding the largest number of UMs subject to litigation from 2000 to 2022 (ranging from 22 to 63 UMs), 3 were Taiwanese and 17 were Chinese. Even among the top 50 holders of litigated UMs, the large majority were Chinese (including Segway, the former US manufacturer of personal mobility devices, now a Chinese-held firm), together with a handful of Taiwanese and Japanese firms.

18.2.3.2 Litigated SEUMs

Unlike UMs more generally, IPLytics identified only 13 SEUMs that were involved in judicial or administrative proceedings around the world between 2000 and 2022: six in China and seven in Germany (Table 18.4).

Despite the low number of litigated SEUMs, Table 18.4 makes possible a few observations. First, as noted above, SEUMs are technical in nature, often indistinguishable in their specifications and claims from patents. This being said, upon a cursory inspection, at least two of the three SEUMs declared with respect to JEDEC standards appear to relate more to physical connections among electronic components than the internal functionality of those components (a more typical approach for UM). The SEUMs declared with respect to ETSI standards, however, appear highly technical in nature and are of a nature similar to other SEPs declared at ETSI.

Second, the large majority of these cases (92 percent) involved administrative validity challenges to SEUMs. In China, these were brought in the Reexamination

TABLE 18.4 *Litigated SEUMs, 2000–2022*

Jurisdiction	Type of action	Owner	First declared	SDO	Standard	UM title
Germany	Admin. challenge	Samsung	2003	ETSI	2G 3G 4G 5G	Device for channel coding and multiplexing in a CDMA communication system in a CDMA communication system
Germany	Admin. challenge	Samsung	2003	ETSI	3G 4G 5G	Uplink transmitting device for mobile communication system, has rate matcher that bypasses information symbols and processes parts of first and second parity symbols according to given rate matching rule
China	Admin. challenge	InterDigital	2008	ETSI	3G	User equipment for high-speed shared control channels
Germany	Enforced and Admin. challenge	Netlist	2010	JEDEC	3DS LRDIMM	System that uses distributed bitwise buffers on a memory module
China	Admin. challenge	InterDigital	2011	ETSI	3G	User equipment of media access control multitasking/de-multitasking and base station
China	Admin. challenge	Foxconn	2011	JEDEC	SO-006SODIMM	Opposite-linked connection assembly
Germany	Admin. challenge	ZTE	2011	ETSI	5G	Apparatus for generating and breaking down signaling of uninterrupted means
China	Admin. challenge	Foxconn	2013	JEDEC	SO-018	Card rim connector
Germany	Admin. challenge	Samsung	2015	ETSI	3G 4G 5G	Device for performing a handover in a mobile communication system
China	Admin. challenge	InterDigital	2016	ETSI	3G 4G 5G	Radio communication system for providing channel distribution information for supporting UL and DL channel
Germany	Enforced	Nokia	2016	ETSI	4G	Randomization of block-spread signals
China	Admin. challenge	InterDigital	2020	ETSI	2G 3G 4G	High speed down-stream chain circuit public channel subscriber equipment able to support mixed automatic repeated request
Germany	Enforced and Admin. challenge	IP Bridge	2020	ETSI	4G	Terminal device

and Invalidation Department of the China Patent Office, though three of the six challenges were appealed to the Chinese courts.

In Germany, these administrative challenges were brought at the Deutsches Patent und Markenamt (DPMA) (the German Patent and Trademark Office). Of the seven German SEUM cases identified, two involved both an administrative validity challenge at the DPMA and a judicial enforcement action (one in Düsseldorf and one in München), and one involved only an enforcement action (brought in München). All of the German administrative challenges appear to have been unsuccessful, as each of the challenged UMs is recorded as having expired at the natural end of its 10-year term (i.e., it was not prematurely canceled).

The three German enforcement actions were brought by IP Bridge, a patent assertion entity, and Netlist and Nokia, product-based companies that are active in patent enforcement.³⁹ Florian Mueller offers a first-hand report on the Netlist litigation, which involved prominent litigation counsel and sophisticated legal issues and was seemingly tied to related litigation in other jurisdictions.⁴⁰

18.2.4 *Summary of Findings*

The principal findings of this study can be summarized as follows:

1. Some, but not all, SDOs expressly permit or require the disclosure and licensing of UMs that are potentially essential to their standards. The requirements of SDO policies that do not expressly mention UMs are ambiguous.
2. Nearly 1,000 UMs (SEUMs) have been declared as essential to broadly adopted industry standards at ETSI and other prominent SDOs in the ICT sector.
3. Firm strategies appear to differ dramatically in terms of SEUM declaration, ranging from intensive to virtually no SEUM activity, even among firms of similar size and market focus.
4. Though far less than other SEPs, SEUMs have been subject to litigation multiple times in China and Germany, and there appears to be no structural barrier to their litigation in other jurisdictions.

18.3 DISCUSSION

The findings of this study raise a number of implications for governmental policy, SDO operations and firm strategy, and also suggest numerous avenues for additional research.

³⁹ See Stanford Law Sch., NPE Litigation Database, <https://npe.law.stanford.edu> (visited September 17, 2023) (classifying patent asserters).

⁴⁰ Mueller 2018.

18.3.1 SDO Policies and UMs: Is a UM a “Patent”?

One of the key questions raised about UMs is whether they should be considered to be “patents” for purposes of SDO policy requirements. While UMs are clearly distinct from patents under international IP treaties and the laws of countries with UM systems, the distinction may be less clear when viewed from outside those countries.⁴¹ And, as noted in the Introduction, some jurisdictions refer to UMs as petty patents, innovation patents or registration patents,⁴² implying that, at least in a broad definitional sense, they constitute a form of patent.

As discussed in Section 18.1.4, while some SDOs, such as ETSI and IETF, expressly require the disclosure and licensing of SEUMs in their IPR policies, other SDOs do not expressly include UMs within the scope of their patent disclosure and licensing commitments. Yet, as shown in Table 18.2, firms have nonetheless disclosed SEUMs to SDOs, such as JEDEC and ATSC, that fail to include UMs within their definitions of “patents”.

At these SDOs, the legal effect of such disclosures is not entirely clear. Would a UM declared as essential to a standard be treated in the same manner as a patent declared under that policy and thus be subject to the SDO’s FRAND licensing requirements? Or would the UM disclosure be disregarded as noncompliant with a policy that only permitted the disclosure of patents, and thus lack any legal effect?

The converse question also arises: if an SDO policy does not explicitly require the disclosure of UMs, then what obligation, if any, does the holder of an SEUM have to disclose and/or license that UM to implementers of the standard? Technically speaking, if UMs are not subject to an SDO’s FRAND licensing requirements, then an SEUM holder would be free to charge supra-FRAND royalties for its SEUMs, or to refuse to license them at all. Though one could argue that the nondisclosure or concealment of a UM would implicitly violate the spirit of the SDO’s disclosure and licensing policies, or even applicable competition law.⁴³

It is likely that the answers to these questions would depend on the specific understandings and intentions of the SDO members who drafted and approved the relevant policy,⁴⁴ and would thus be highly fact-specific (and vulnerable to differing recollections). In order to avoid these interpretive uncertainties, SDOs that have not expressly addressed the treatment of UMs under their disclosure and

⁴¹ For example, in *In re Carlson*, 983 F.2d 1032, 1033 (Fed. Cir. 1992), the U.S. Court of Appeals for the Federal Circuit held that a German UM “constitutes an ‘invention . . . patented . . . in . . . a foreign country’ within the meaning of 35 U.S.C. § 102(a) and thus may be considered prior art”.

⁴² See note 3, *supra*, and accompanying text.

⁴³ See Hesse and Marshall 2017 (describing legal enforcement actions against firms that withheld information about SEPs from SDO and other participants).

⁴⁴ See Contreras 2017c, 219–220 (discussing *Rambus* and *Broadcom* cases in which understandings of SDO participants have been recognized notwithstanding SDO policy language to the contrary).

licensing policies (as well as any governmental policies relating to SEPs) would do well to do so.

18.3.2 *Including SEUMs in SEP Databases*

While some UMs are currently included in SDO-maintained databases of SEPs, it is sometimes difficult to distinguish SEUMs from ordinary SEPs in the relevant database entries.⁴⁵ Understanding this distinction could be useful for SDO participants and standards implementers, however, given the shorter duration of UMs and their different use in litigation. SDOs could do more to clarify the type of rights that are listed in their databases by clearly identifying which disclosed rights are SEUMs versus SEPs.

In addition to SDOs, the European Commission recently proposed legislation that, among other things, would create a new official registry and database for SEPs issued in the European Union.⁴⁶ Though early drafts of the proposal included utility models within the scope of the proposed regulation,⁴⁷ the current proposal does not contemplate UMs,⁴⁸ thereby omitting these potentially important rights. The reasons for this change have not been disclosed publicly by the Commission.⁴⁹ As one of us has previously noted in written comments submitted to the Commission, it should revise its proposed regulation to include European UMs along with patents or, at a minimum, reduce ambiguity by indicating why UMs were excluded from the proposal.

18.3.3 *Enforcement of SEUMs*

The potential overlapping coverage of patent and UM protection and the malleable nature of UM claims (including the ability, in countries such as Germany and Italy, to alter them during the course of litigation),⁵⁰ have led to their tactical use in infringement litigation. This degree of uncertainty is not likely to improve the clarity or predictability of the standardization ecosystem, particularly if individual firms begin to increase their declaration of UMs as SEUMs. While it appears that little

⁴⁵ Some countries designate UM numbers distinctly from patent numbers, but this distinction is not always easy to identify, particularly with non-Western character sets.

⁴⁶ European Commission 2023c.

⁴⁷ Proposal for a Regulation of the European Parliament and of the Council on Standard Essential Patents (leaked draft, March 29, 2023), art. II(3) (“‘patent’ means patent or utility model”), Art. II(3) (“‘patent’ means patent or utility model”).

⁴⁸ European Commission 2023c (definitions in Art. II refer only to patents).

⁴⁹ Mueller hypothesizes that two factors may have contributed to the change: a desire not to subject shorter-term UMs to the mandatory 9-month deliberation period introduced elsewhere in the Proposal, and the possible legal issues arising from an attempt by the EU to regulate UMs, which are not EU-harmonized rights (Mueller 2023).

⁵⁰ See Chapters 6 (Germany) and 7 (Italy).

short of national UM reform and/or harmonization can fully address these concerns (see Section 18.3.5), SDOs could eliminate at least some potential ambiguity by affirmatively including UMs within the scope of their disclosure and licensing requirements. Doing so would, at a minimum, reduce the likelihood that SEUMs could be used to obtain injunctions against the use of standards by implementers “willing” to obtain licenses of SEUMs on FRAND terms.

18.3.4 *Essentiality of SEUMs*

As discussed in Section 18.1.2, patents are defined as SEPs only if they are “essential” to the implementation of a standard, where essentiality exists if a product implementing the standard necessarily infringes the claims of the patent. The obligation to disclose SEPs (and, presumably, SEUMs) typically arises during development of a standard, prior to its approval and publication by the SDO. Yet UM claims may be more malleable after issuance than those of patents. This malleability raises questions concerning the potential essentiality of SEUMs, and the degree to which changes to claim scope can or should be taken into account when assessing the effect of FRAND commitments on UMs.

18.3.5 *SEUMs and FRAND Royalties*

If SEUMs are deemed to constitute SEPs under an SDO’s disclosure and licensing policies, SEUMs raise distinct but related questions regarding the calculation of FRAND royalties. First, given that UMs are generally not given substantive examination by relevant patent offices, their terms are shorter than those of patents and in some jurisdictions they lack direct enforceability, an argument could be made that UMs are, on average, less “valuable” than patents. As such, an argument could be made that the “fair and reasonable” royalty payable with respect to a SEUM should be less than the “fair and reasonable” royalty payable with respect to a SEP. By extension, the value of (and the FRAND royalty payable with respect to) a portfolio that includes SEUMs should be less than the value of a similarly sized portfolio that includes only SEPs. If SEUMs are not distinguished from SEPs when portfolios are valued, then incentives will exist for opportunistic firms to “stuff” their portfolios with cheap and easy-to-obtain SEUMs of questionable validity and essentiality in order to increase the size (and putative value) of those portfolios.

The issue of SEUM valuation has implications not only for transactions between individual holders of SEUMs and potential infringers, but for *all* holders of SEPs (and SEUMs) that are declared to be essential with respect to a particular standard. For example, when SEPs and SEUMs are placed into a pool for collective licensing to implementers of a standard, the royalty received from implementers is often distributed among pool members in proportion to the number of patents that they have licensed to the pool. The share of such royalties allocable to SEUMs, however, should arguably be lower than the share allocable to SEPs.

The same issue arises in connection with the “top-down” calculation of FRAND royalties payable with respect to a standard. Top-down royalty calculation methodologies seek to determine the overall value of a standard to a product, to use that value to assess an aggregate royalty for SEPs covering the standard, and then allocate a portion of the aggregate royalty to each holder of SEPs based on the number (and possibly the value) of its SEPs.⁵¹ Top-down FRAND royalty calculations, which have already been utilized in judicial decisions in the US, UK and Japan may take on even greater prominence under a recent European Union proposal to implement a top-down calculation methodology in official calculations of aggregate SEP royalties.⁵²

If SEUMs are valued lower than other SEPs, then in such top-down royalty determinations, the presence of SEUMs should be a factor used in determining both the overall level of royalties payable with respect to a standard, as well as the share of such aggregate royalty that is allocated to different holders of SEPs and SEUMs.

18.3.6 *Harmonization*

Traditionally, UMs have existed largely as devices of national law with little harmonization among jurisdictions, even within closely knit regions such as the European Union. Yet the entry of UMs into the field of technical standardization, an inherently multinational arena, begs the question whether UM systems should be harmonized to a greater degree. That is, if UMs can effectively be utilized to expand individual firm portfolios of patents subject to FRAND licensing, then jurisdictions that make it easier to obtain UMs are likely to attract more UM filers, and perhaps to draw applicants away from their own, or other, patent systems (e.g., if a UM can be obtained for one fourth the cost of a patent, in one fourth the time, but yields a similar value, then UMs could quickly become preferred instruments in some markets). What’s more, fast and cheap UMs could result in a “race to the bottom” among jurisdictions seeking to capitalize on the “numbers game” among SEP holders. These considerations should encourage policy makers to consider more closely aligning UM systems across borders.

18.3.7 *The Costs of Uncertainty Surrounding SEUMs*

As noted above, UMs involve substantial uncertainty, both as to their coverage and enforceability, as well as their status (or not) as SEPs. This uncertainty can be utilized opportunistically by actors within the standardization ecosystem. For example, depending on the relevant SDO policy in effect, the holders of UMs

⁵¹ See Contreras 2017a, 692–696.

⁵² Eur. Comm’n 2023.

may argue that UMs are excluded from the SDO's FRAND disclosure or licensing commitments, thus giving them free rein to conceal these UMs from SDOs and implementers and to charge supra-FRAND royalties for the use of these rights. Likewise, UMs may be used tactically to seek injunctive relief against implementers before SEPs are issued. On the other hand, implementers that wish to delay negotiation over FRAND licenses (i.e., "holding out") may raise the inherent uncertainty of UMs when negotiating such licenses. This uncertainty could thus destabilize the standardization system, imposing greater transactional costs on both UM holders and implementers, delaying the development of important new standards, imposing costs on consumers and depriving the market of new standardized products.

18.3.8 SEUMs and Innovation

UM systems were introduced in many jurisdictions to stimulate local innovation and industry via a low-cost pathway to intellectual property protection for modest or incremental designs not rising to the level of patentable invention. Yet our findings show that SEUMs are largely being filed and declared by major international firms with active patenting programs, and that these UMs often cover technologies that are, or could also be, covered by patents. To the extent that UMs are being used primarily to obtain duplicative coverage for the same technological innovations, or for tactical litigation advantage, they may not be achieving the goals for which they were originally designed. As a result, policy makers may wish to consider the findings of this study when evaluating the ongoing value of UM systems in their countries.

18.3.9 Areas for Further Research

There remains more to be studied with respect to UMs and the standardization ecosystem. One area for further research is an assessment of the "quality" of UMs that are declared as SEUMs, both in comparison to other UMs and to SEPs. The question of patent quality has attracted significant attention from scholars as well as governmental authorities in recent years, and numerous metrics for the measurement of patent quality have been developed (e.g., citation analysis). However, we are unaware of any significant study of UM quality or analysis on whether the same metrics applied to patents can be applied to UMs. Further research of these questions would help to establish the value of SEUMs that form a part of SEP portfolios and to establish FRAND royalty rates both for individual SEUMs, portfolios including both SEUMs and SEPs, and for top-down FRAND royalty determinations for entire standards.

It would also be useful to gain a better understanding of the business strategies that have led some firms to declare SEUMs in large quantities, while others have

largely ignored them. Thus, just as Ford Motor Co. in the automotive sector has been observed by Cahoy and Oswald to have adopted a business strategy involving the acquisition (and possibly assertion) of UMs,⁵³ InterDigital, during the 2000s, appears to have adopted such an approach in the ICT sector, particularly around standards developed under the aegis of ETSI. Samsung, the second highest holder of SEUMs, appears to have adopted a similar strategy. A greater appreciation for firm strategy in relation to UMs could help policy makers to tailor their UM systems to the needs of the private sector.

Further research into SEUM assertion and litigation is also warranted. The litigation data that we reviewed could be supplemented with more detailed information regarding case outcomes, timing and tactics. Greater visibility into these issues could help policy makers to assess whether UMs are being (or could be) abused as litigation devices, and whether procedural safeguards should be put in place to avoid such abuse in the future.

18.4 CONCLUSION

UMs, once a “back water” of intellectual property scholarship,⁵⁴ may be more relevant to technology-intensive standards than previously thought. This study demonstrates that UMs are being declared essential to industry standards in significant numbers, at least by some firms. Given the relative ease, speed and cost-effectiveness of obtaining UMs, it is possible that this trend will continue. Yet UMs involve a degree of uncertainty, both as to their coverage and enforceability, as well as their status (or not) as SEPs. Such uncertainty imposes unnecessary costs on the standardization ecosystem and can be utilized opportunistically both by UM holders and implementers. Accordingly, policy makers and SDOs should thus consider clarifying, and more intensely harmonizing, their rules concerning UMs and SEUMs. Firms and courts should likewise consider the value of SEUMs when calculating FRAND royalties for portfolios and overall standards. Finally, these findings invite reconsideration of the role of UMs in the innovation ecosystem.

⁵³ Cahoy and Oswald 2021, 568.

⁵⁴ Janis 1999.