

Bridging the Gap - Webinar Series Part 2:

Generating insights from SEP Litigation & Licensing Data

Tim Pohlmann IPlytics GmbH

Recording: https://youtu.be/As_4RzURsNE

IPLYtics Webinar Series 2022

- I. Bridging the Gap Part 1: “Generating insights from SEP Declaration Data”
September 27th, 2022
Recording: <https://www.iplytics.com/events/past/>

- II. Bridging the Gap Part 2: “Generating insights from SEP Litigation Data”
October 25th, 2022
Recording: <https://www.iplytics.com/events/past/>

- III. Bridging the Gap Part 3: “Generating insights from Contribution Data”
November 29th, 2022
Register: <https://www.iplytics.com/events/upcoming/>

Today's Speaker



The World's Leading IP Strategists **2022**

Tim Pohlmann
Chief Executive Officer, IPlytics GmbH

IAM says: As architect of the game-changing IPlytics intelligence platform, Tim Pohlmann has distinguished himself as one of the most forward-thinking minds in intellectual property today. He is a top expert on standard essentiality and has his finger on the pulse of technology industry developments.



- **PhD & Post Doc.** TU Berlin, CERN, MINES ParisTech.
- **CEO and founder of IPlytics.**
- **2022 IAM Strategist 300.** Panel speaker thought leader.
- **Economic expert** and author of studies for the EU Commission, WIPO and German government.
- Appointed **faculty lecturer** (TU Berlin, EPF Lausanne, CEIPI Strasbourg, Cleveland-Marshall College of Law)
- **Author** of over 50 industry articles published at IAM Magazine, IPWatchdog and Managing IP.

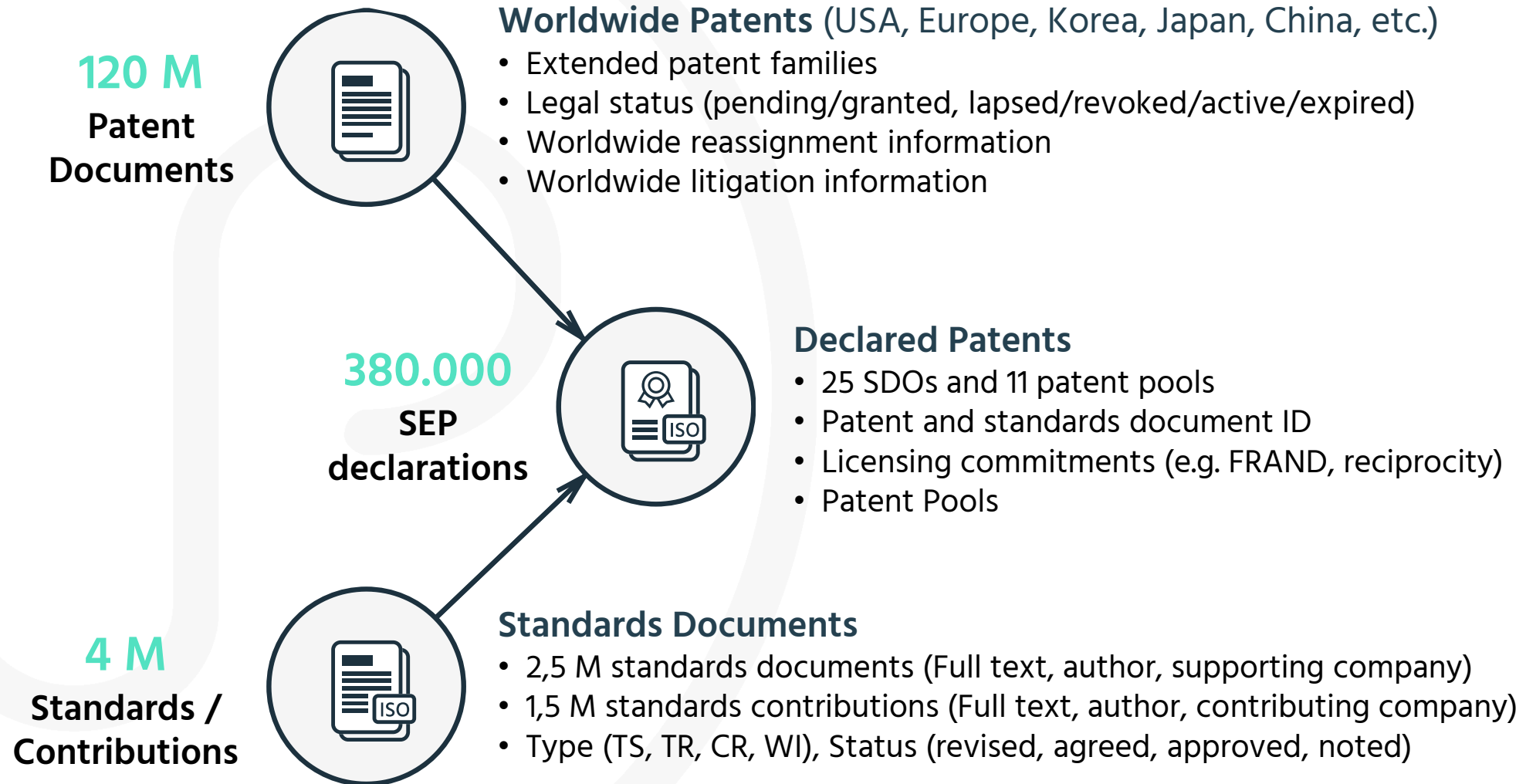


Agenda

- I How to connect declared SEP data with litigation data and pool data
- II Licensing, Transacting and Litigating trends
- III Shifting SEP markets
- IV Joint licensing platforms and patent pools
- V Bilateral SEP licensing
- VI Patent declarations and essentiality tests – Essentiality Prediction
- VII How to leverage access to patents and standards data cross-departmental?

| How to connect declared SEP data with litigation and pool data

IPlytics Data Source



Patent Pool Data (1990-2022)

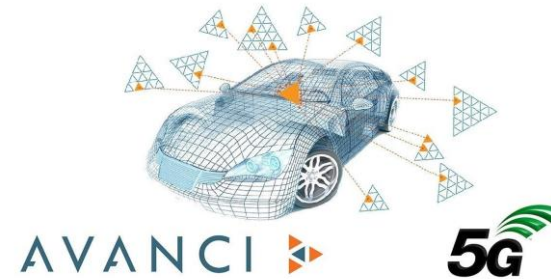
IPLYtics integrates **weekly updated** patent pools listing verified standard essential patents.

Among others:

- **MPEG LA**
- **Via Licensing**
- **SISVEL**
- **AVANCI**
- **ULDAGE**
- ...

*ACCESS*Advance

VEL  S
media




VIA LICENSING



ULDAGE[®]
United License for Digital Age

 **MPEG LA**[®]
The Standard for Standards[®]

Patent Litigation Data (1980-2022)

IPLYtics integrates **monthly updated** world-wide patent litigation data provided by Darts-IP including information on:

- Litigated patents
- Plaintiffs
- Defendants
- Dates
- Courts



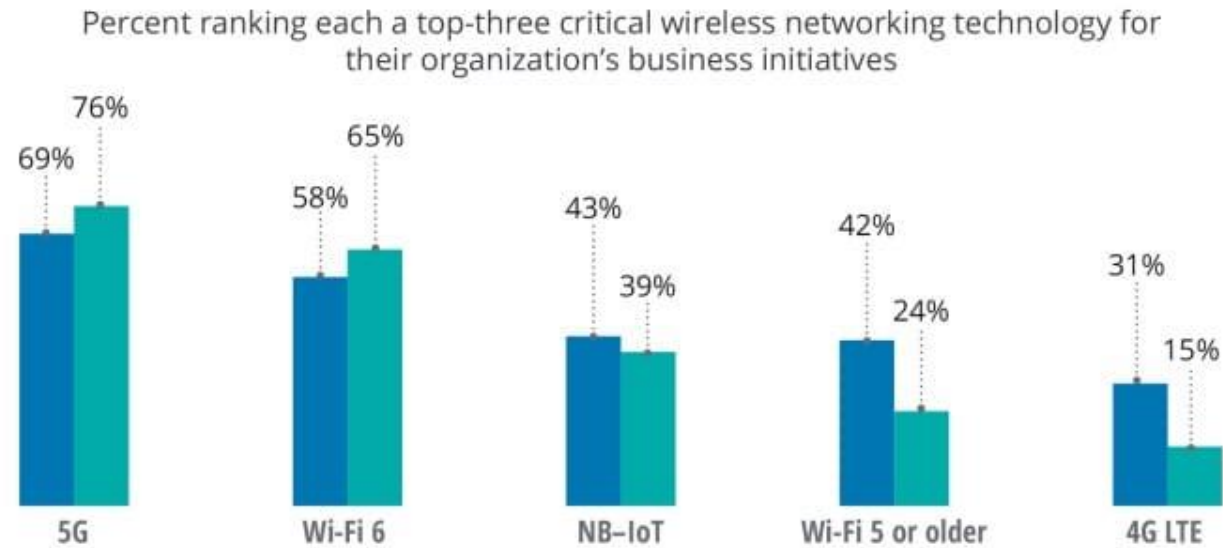
II Licensing, Transacting and Litigating trends

Standards Adoption

FIGURE 1

Networking executives already regard 5G and Wi-Fi 6 as the most critical wireless technologies for their business initiatives—and their importance will continue to grow

■ Today ■ In three years



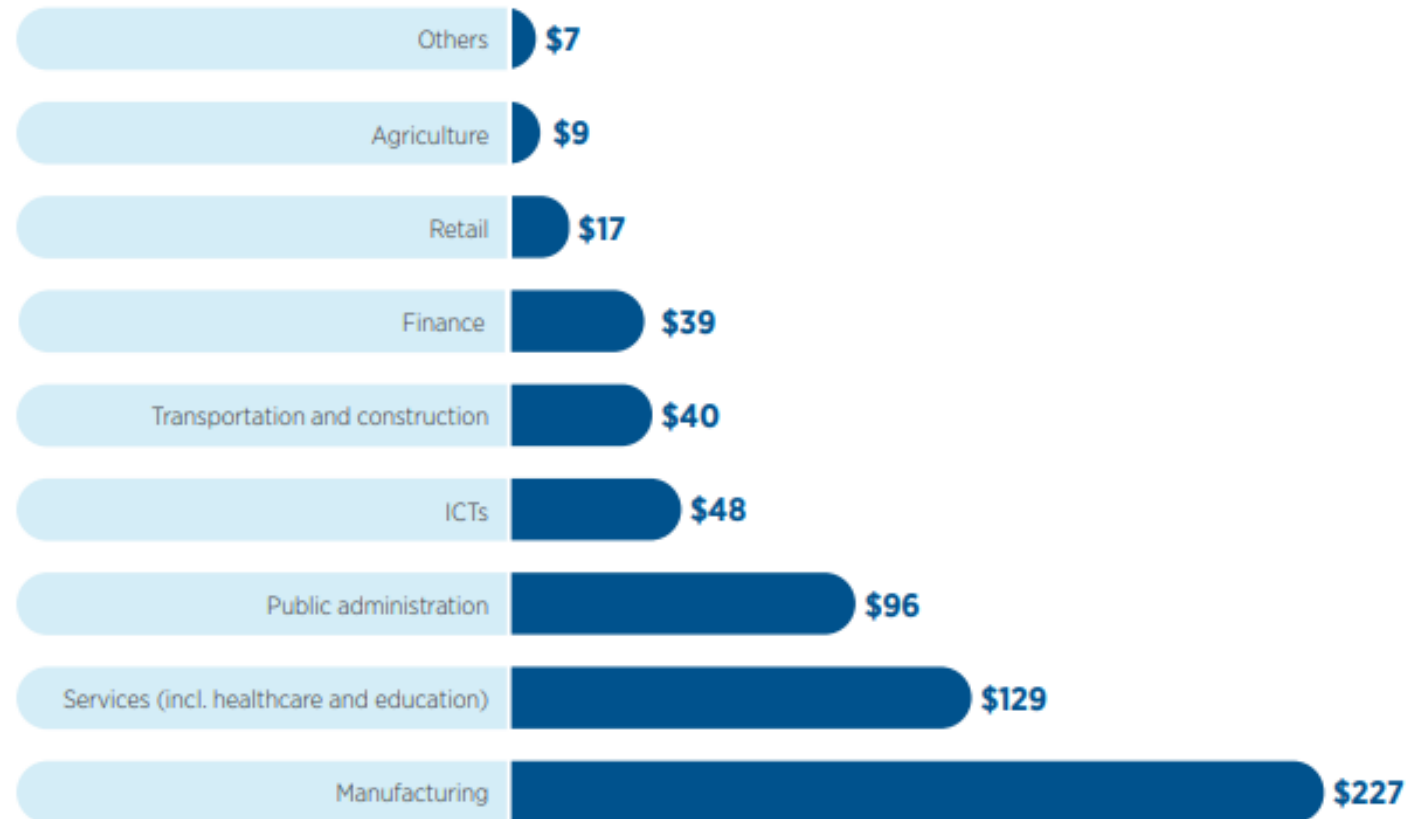
Note: N=437 global networking executives.

Source: Deloitte's Study of Advanced Wireless Adoption, Global Edition, 2021.

Deloitte Insights | deloitte.com/insights

Standards Adoption

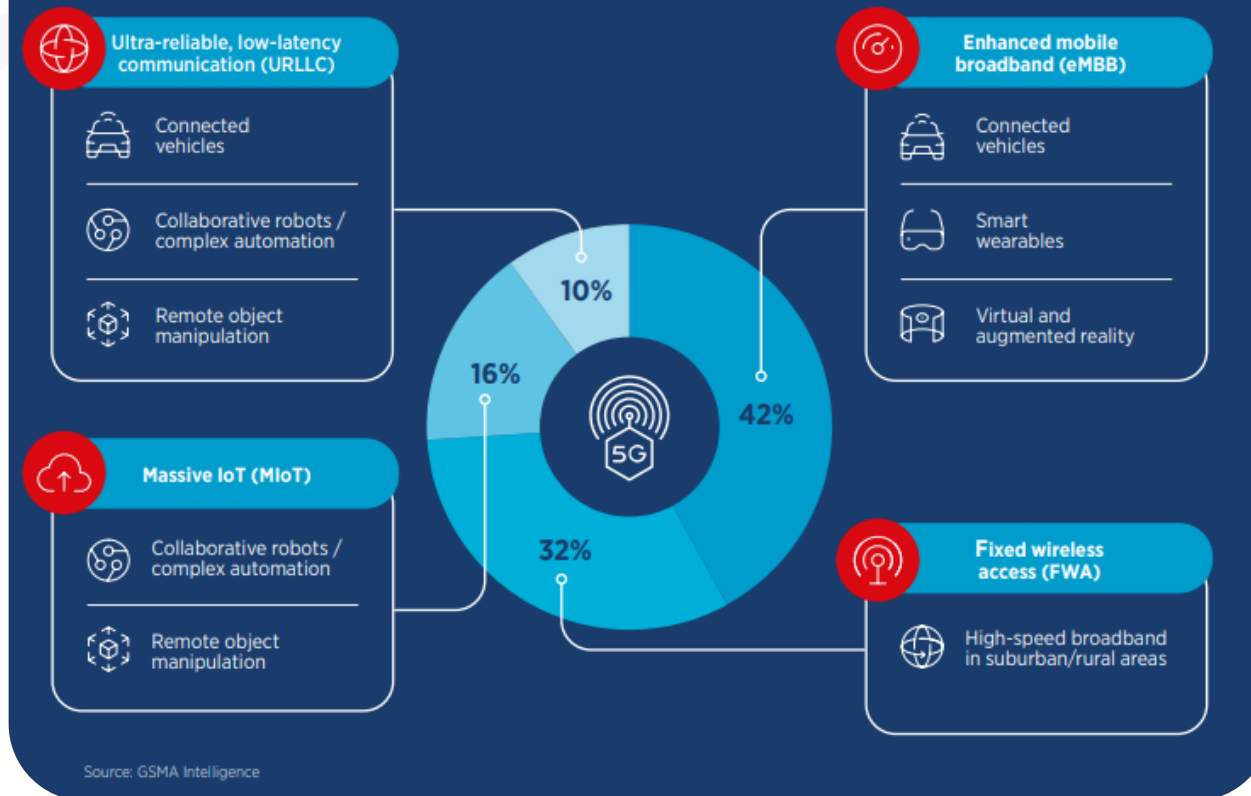
Figure 9: Estimated global contribution of mid-band 5G spectrum to GDP by sector, 2030
(\$ Billion)



Data source: [GSMA Mid Band 5G Spectrum Benefits](#) figure 8

Standards Adoption

Figure 8: Distribution of 5G mid-band benefits, by use case, with selected 5G applications



Data source: [GSMA Mid Band 5G Spectrum Benefits](#) figure 8

Standards Implementation Wi-Fi

Wi-Fi compliant products

- The number of products that implement Wi-Fi outside of the communication sector has drastically increased (e.g. Other and Smart Home).

Category	Products	Brands
Phones	21.507	111
Routers	14.941	297
Televisions & Set Top Boxes	11.941	83
Computers & Accessories	7.652	148
Other	6.757	262
Tablets, Ereaders & Cameras	2.697	86
Gaming, Media & Music	1.636	124
Smart Home	529	89
Building	3	1

Standards competition

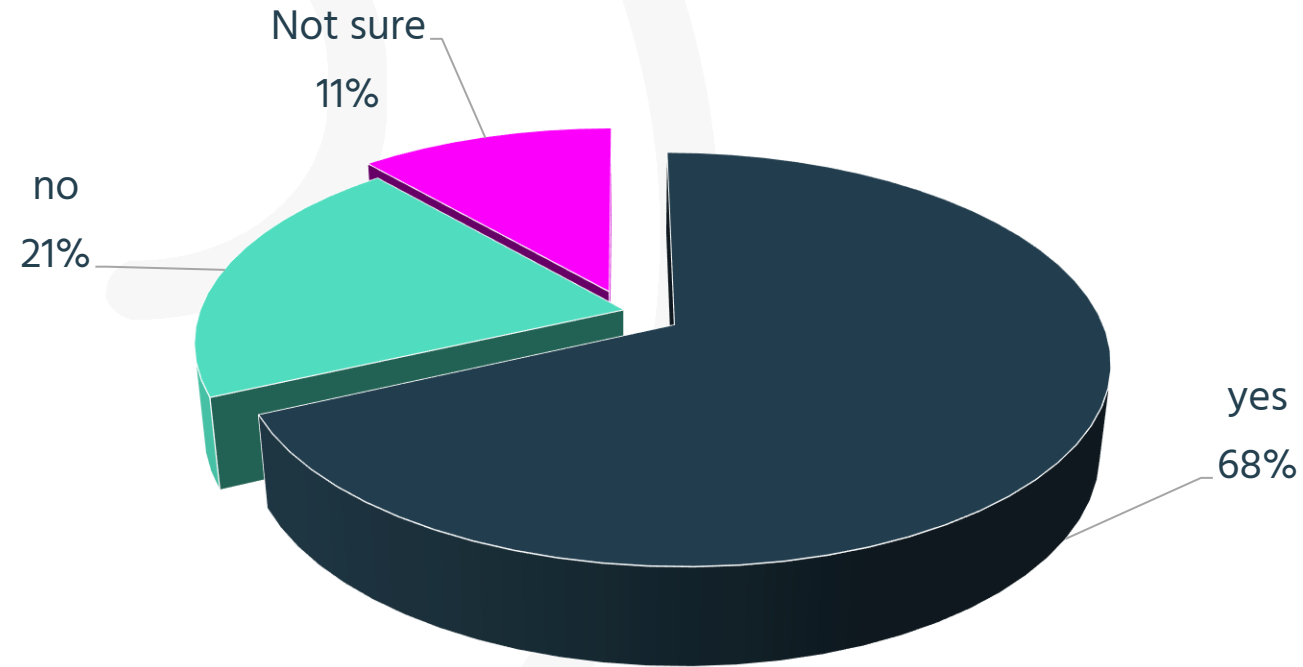
Competing connectivity standards for IoT.

- “For massive IoT, where voice and video over LTE is not necessary, there are other standards that will be competing to cellular, such as Bluetooth, DECT NR+, or other mesh-networks.”

Marianne Frydenlund Senior VP Legal & Compliance Nordic Semiconductor

TU Berlin Industry Survey in 2021

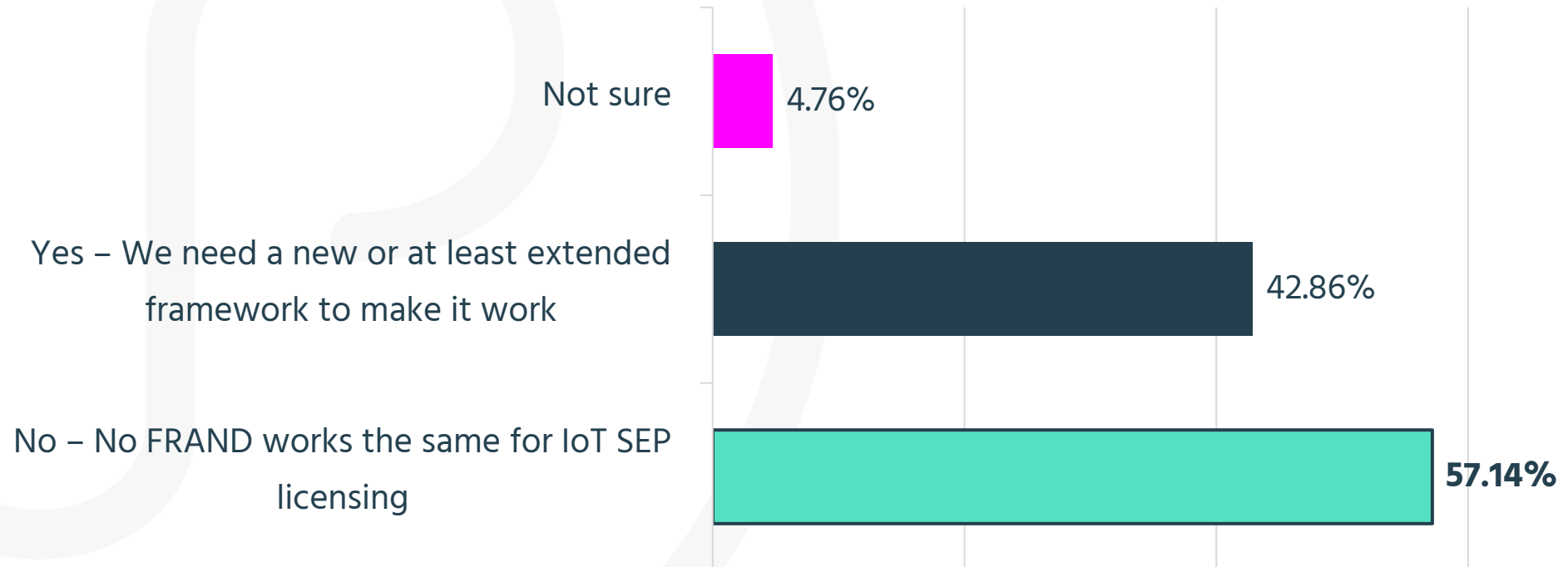
Q1: Do you think that SEP licensing will be more challenging for IoT applications compared to the smartphone market? (N=54)



Source: <https://www.iplytics.com/report/video-recording-tu-berlin-virtual-conference-licensing-of-seps/>

TU Berlin Industry Survey in 2021

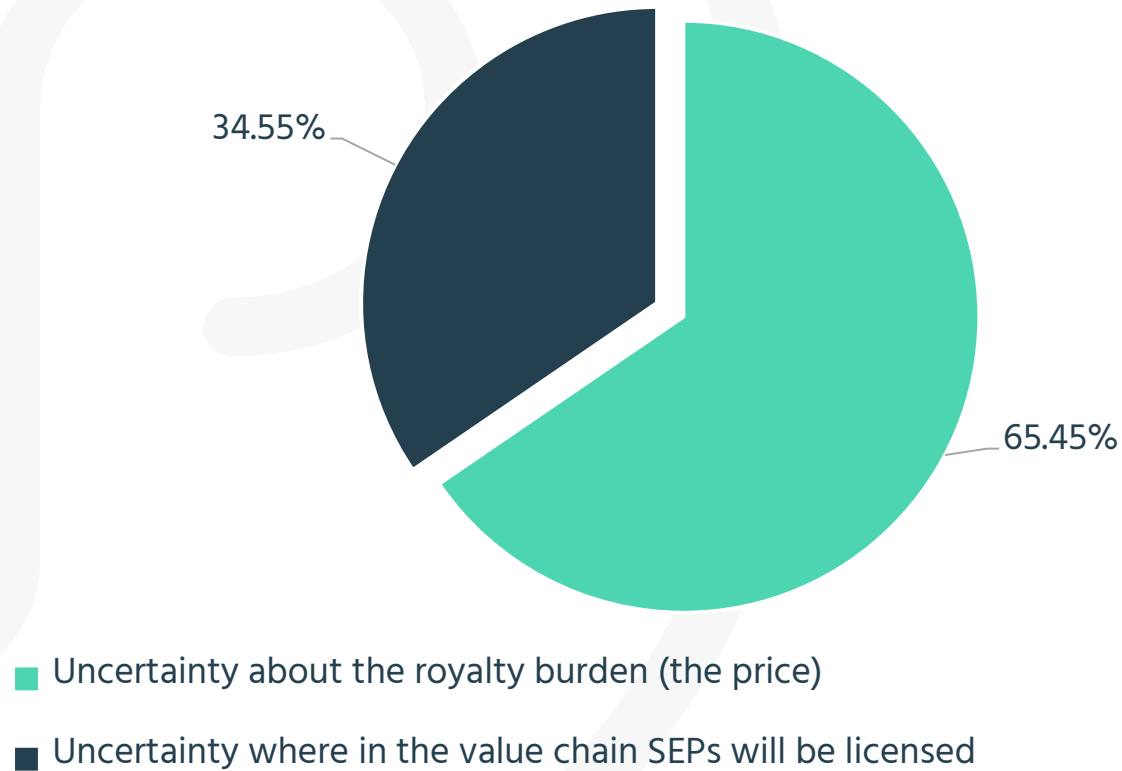
Q2: Do we have to rethink the FRAND framework for SEP licensing for IoT? (N=52)



Source: <https://www.iplytics.com/report/video-recording-tu-berlin-virtual-conference-licensing-of-seps/>

IPWatchdog Poll Question 2022

In your opinion, what SEP-related risk is the most pressing for standards adoption in new industries? (N = 157)



SEP litigation statistics

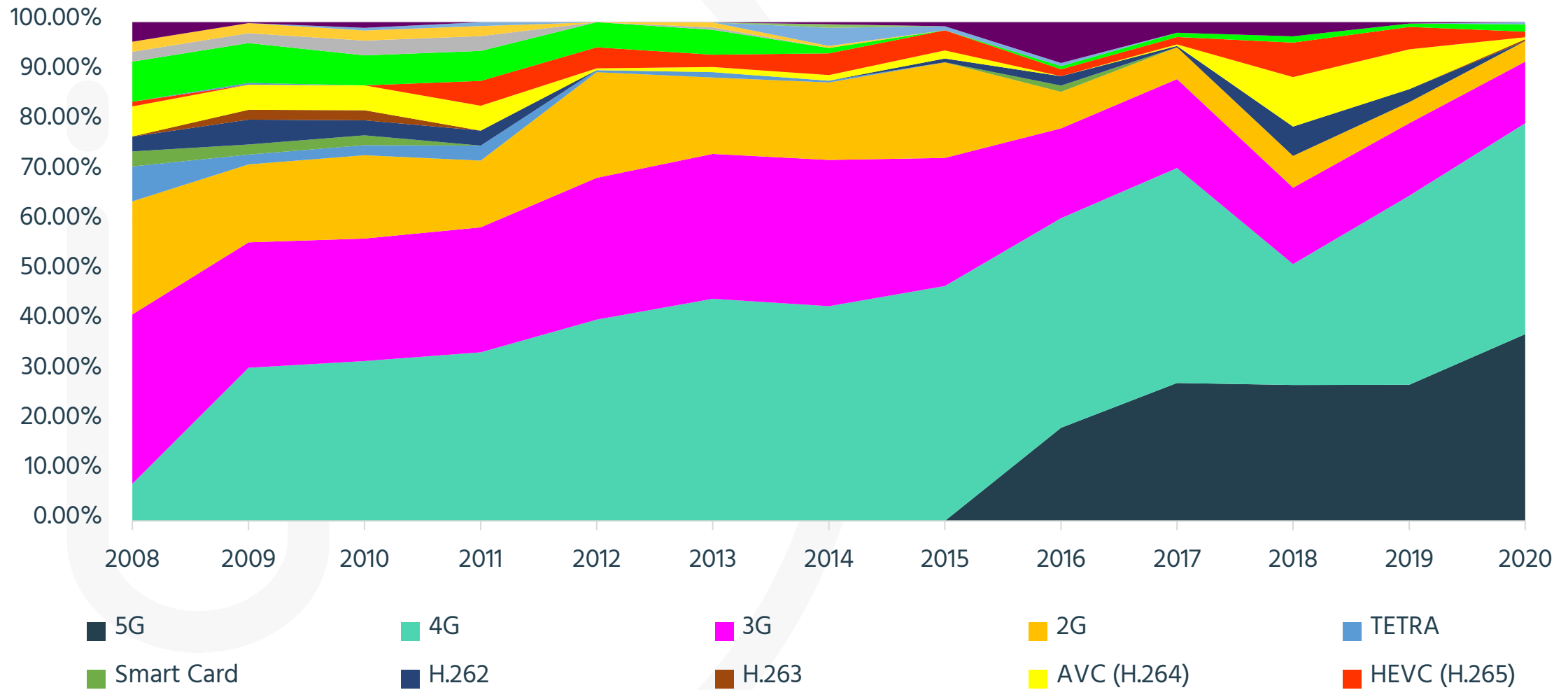
Are declared SEPs more likely to be litigated? (number of US families)

- Yes, data shows that declared SEPs are more than **3x more likely** to be litigated!
- A declared SEP had a chance of **2.27% to be litigated** (US)

Are cases more likely to feature declared SEPs than other cases? (number of US cases)

- Yes, over **4x more likely** a US case would feature a declared SEP
- Of all **US litigation cases, 2.06%** featured at least one declared SEP

SEP Litigation per Standard 2001-2021 (world-wide)



SEP litigation beyond smart phones

Recent SEP auto industry litigation :

- Nokia vs. Daimler (Germany, 2019)
- Sharp vs. Daimler (Germany, 2020)
- Conversant vs. Tesla (Germany, 2020)
- Sharp vs. Tesla (Japan, 2020)
- Sisvel vs. Tesla (USA, 2021)
- L2 Mobile vs. Ford Motors (USA, 2021)
- IV vs. GM, Toyota, Honda (USA, 2021)
- Sharp vs. Volkswagen (Germany, 2022)
- IP Bridge vs. Ford Motors (Germany, 2022)

Automotives: the next battlefield of SEP litigation?

01-07-2019 Pauline Debré and Simon Corbineau-Picci



ParabolStudio / Shutterstock.com

Editor's Picks | M

[Booking.com—floodgate](#)

[Sky v SkyKick goes to](#)

[Donald Trump fights fir
copyright row](#)

[US Copyright Office w
box row](#)

[CPA Global to make re
'new normal'](#)



Query Builder

Untitled Query

Edit

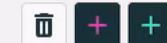
Code Preview

Quick Help

Select All e.g. biotech, 3D print*, car or vehicle

AND Technology Generation Select...

AND Current Assignee e.g. Nokia, "Volkswagen AG" OR Siemens



+ Add Query

Related Keywords:

Search Save Load History Reset

Visual Expert

Results: Analytics Search Data



Results: Analytics

Currently no analytics visible. Please use the query builder above to construct a relevant search.

Need Help?

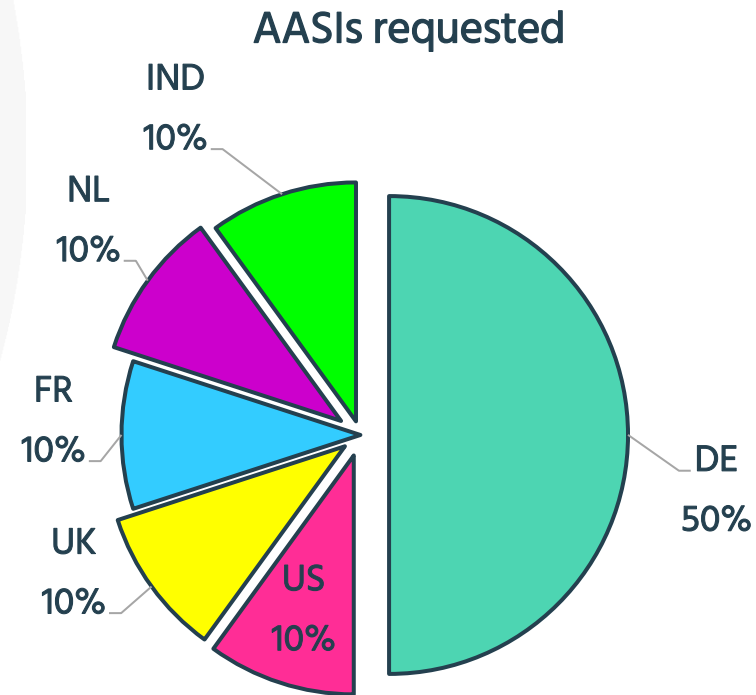
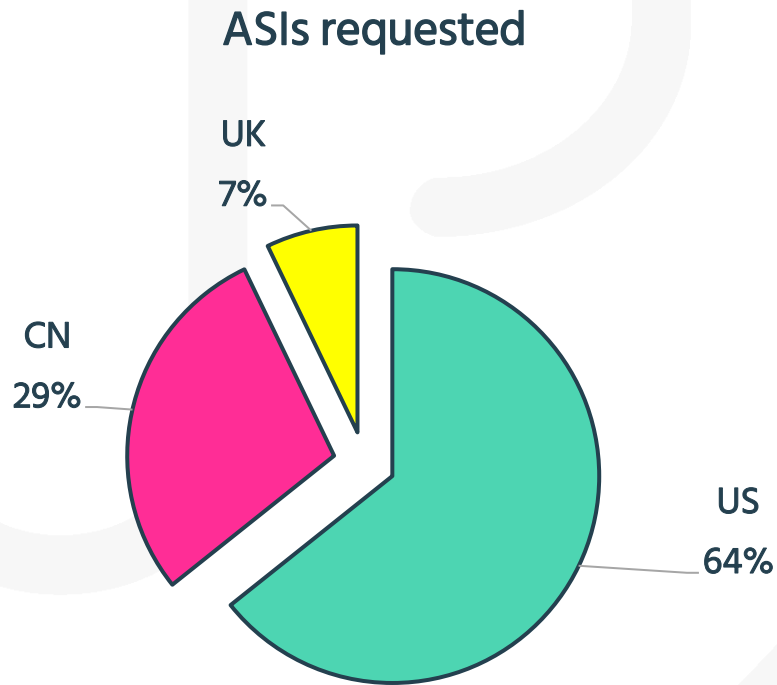
Local courts global rates?

- Decisions in which a national court has considered a request by one of the parties to litigation to determine a **worldwide rate** for FRAND licensing.

Jurisdiction	Instance	Global FRAND?
UK	Vringo v ZTE [2015] EWHC 214 (Pat)	NO
	Unwired Planet Intl. Ltd. v Huawei Techs. Co. Ltd. [2020] UKSC 37	YES
US	TCL Communication Technology Holdings Ltd. v Ericsson US No. 2:15-cv-02370 CV 15-2370 JVS(DFMx) SACV 14-341 JVS(DFMx) (C.D. Cal Dec. 21, 2017)	YES
	Optis Wireless Tech., LLC, v. Huawei Device Co. Ltd., No. 2:17-cv-123-JRG-RSP, 2018 WL 476054 (E.D. Tex. Jan. 18, 2018)	NO
China	Xiaomi Communication Technology Co Ltd v InterDigital Inc [2020] Wuhan Intermediate People's Court, Case E 01 Zhi Min Chu No 169.	YES
	Samsung v Ericsson [2020] Wuhan Intermediate People's Court, Case E 01 Zhi Min Chu No 743.	YES
	OPPO v Sharp, Supreme People's Court (19.08.21). (2020) Zui Gao Fa Zhi Min Xia Zhong No. 517	YES
	Oppo v Nokia Intermediate Court of Chongqing [2021] Docket: (2021)渝01民初1232号	No information available

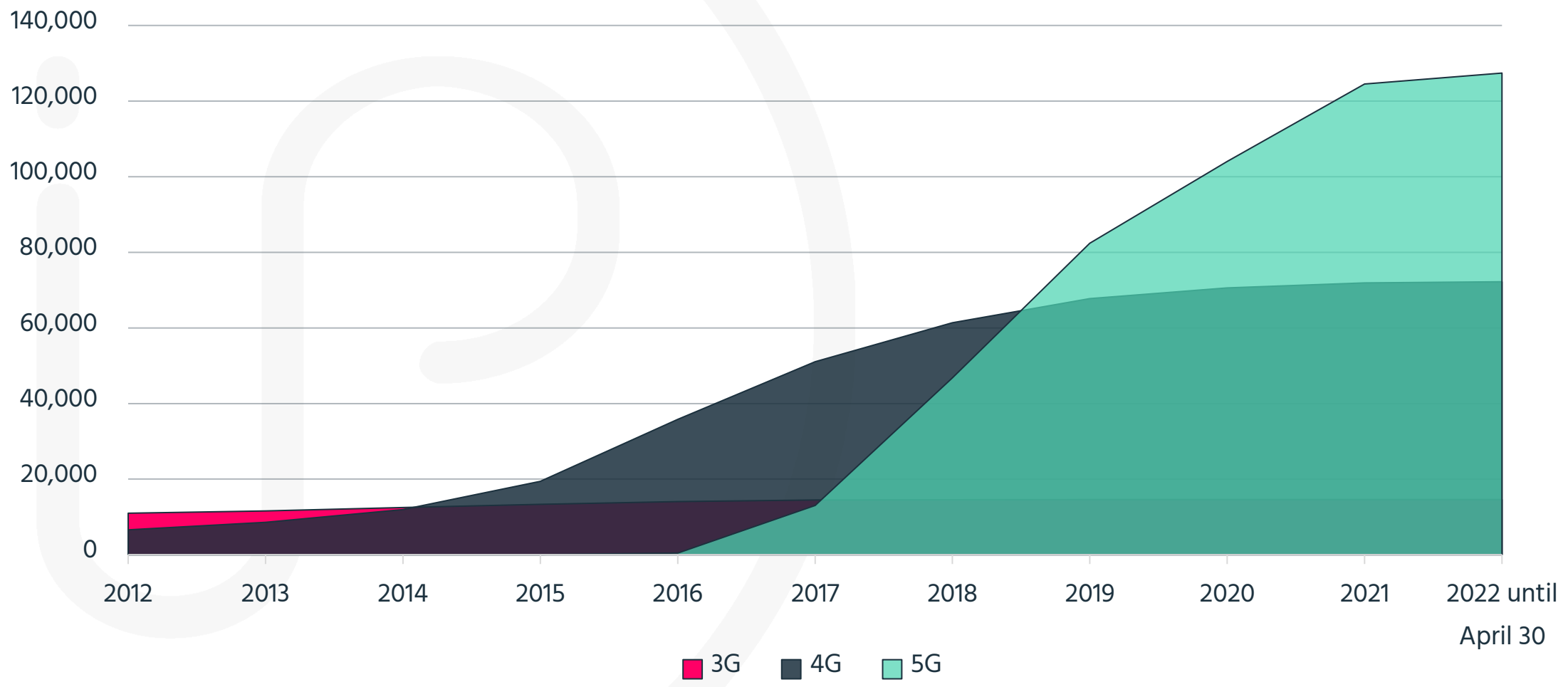
Anti Suite Injunctions?

- Requests for Anti-Suit and Anti- Anti-Suit injunctions – SEP disputes (2012-2021)
- ASIs are essentially coming from non-EU countries and EU countries respond to ASIs by issuing AASIs in order to re-establish their jurisdiction.

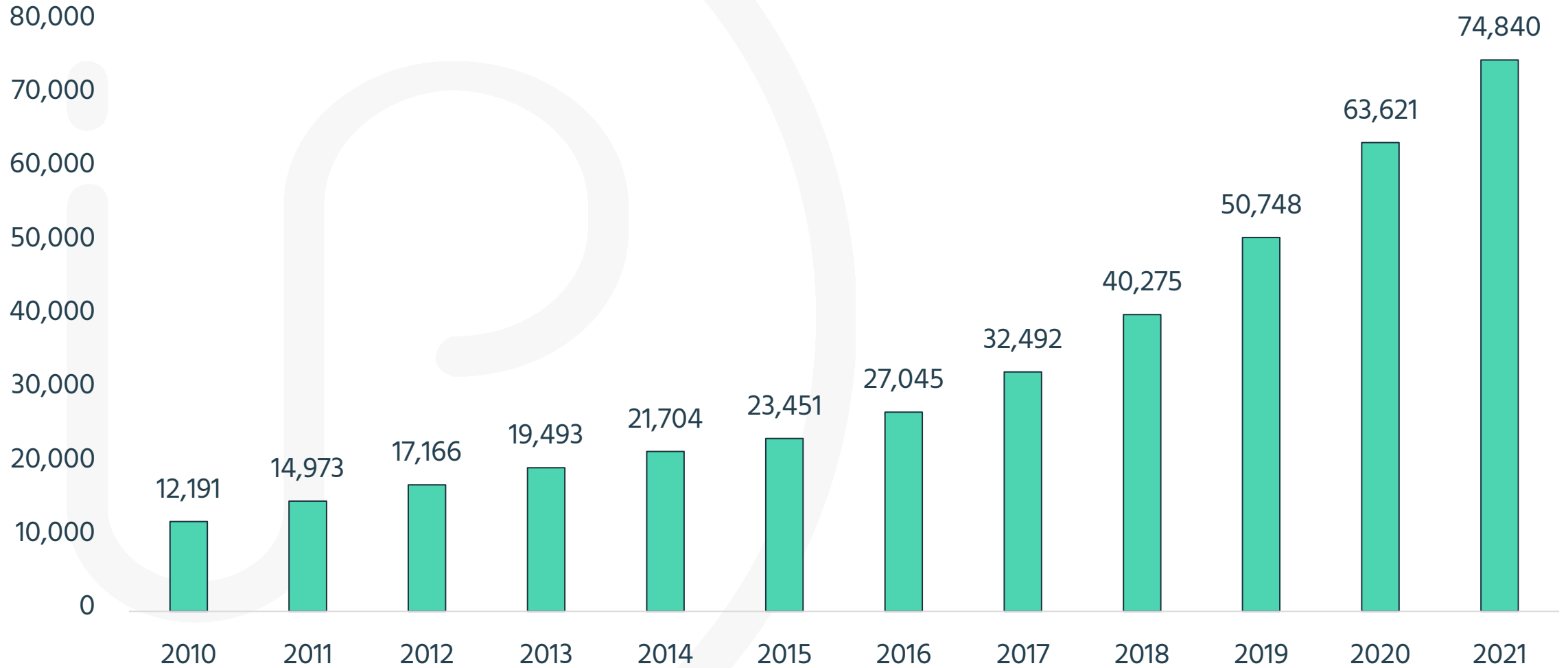


III Shifting SEP markets

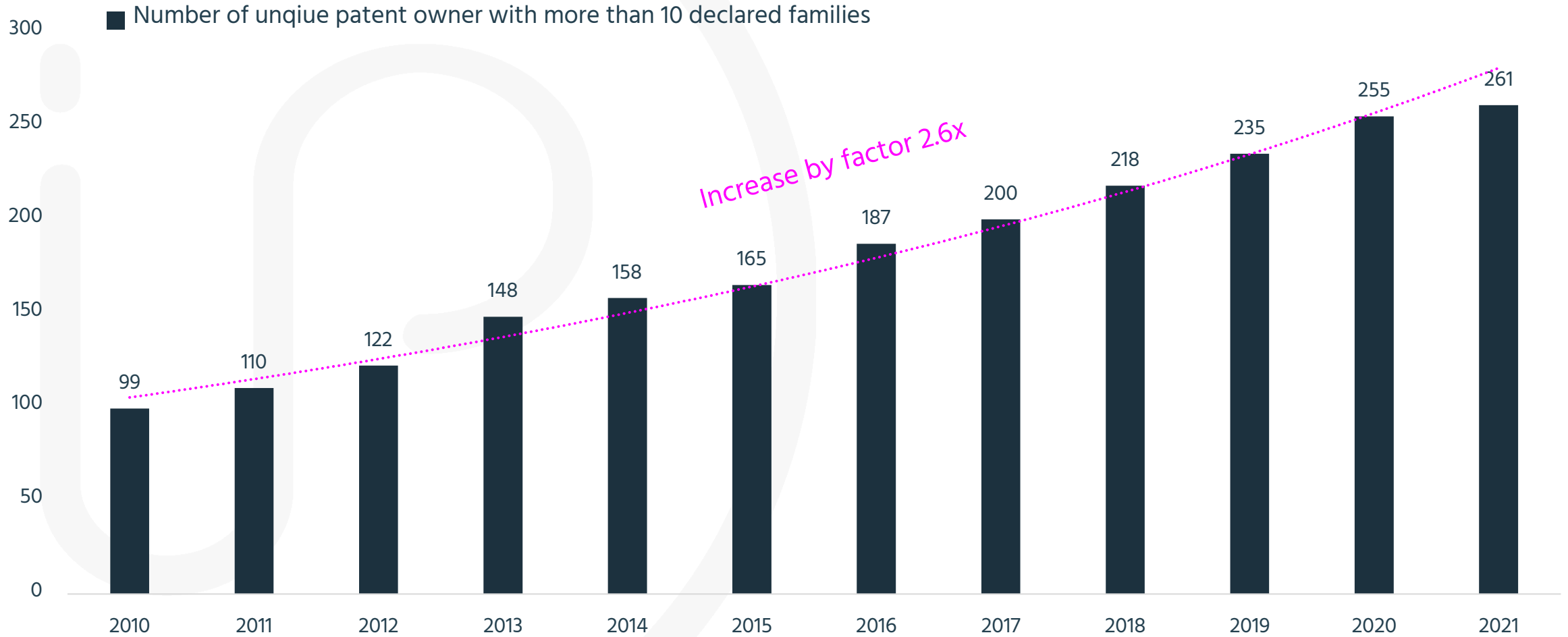
➤ There have been more technical contributions submitted to 5G than in 2G, 3G and 4G combined



➤ Almost 75,000 declared active SEP families declared.

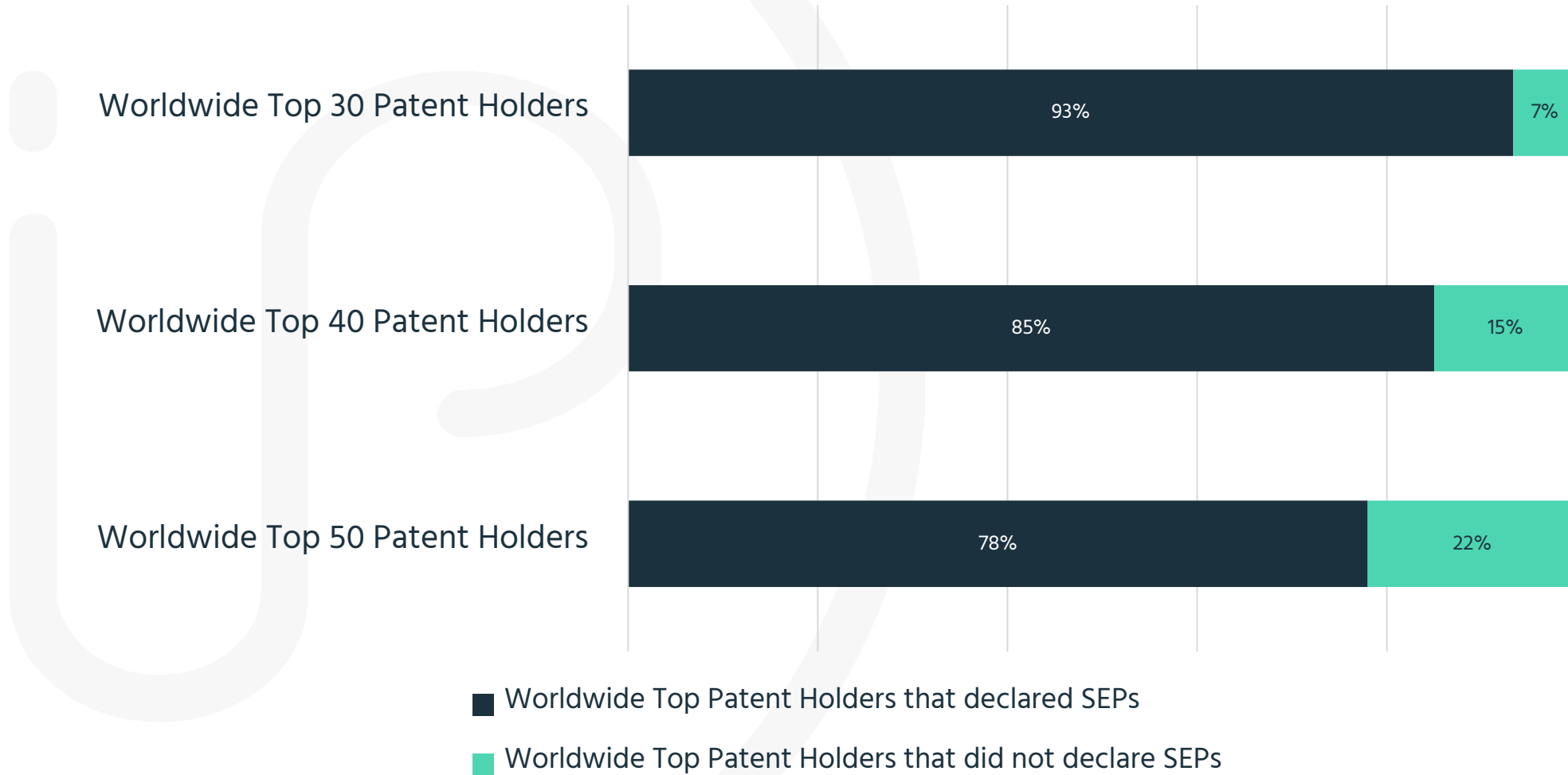


➤ Number of unique SEP holders over time increase



Source: <https://www.iptytics.com/report/rise-standard-essential-patents/>

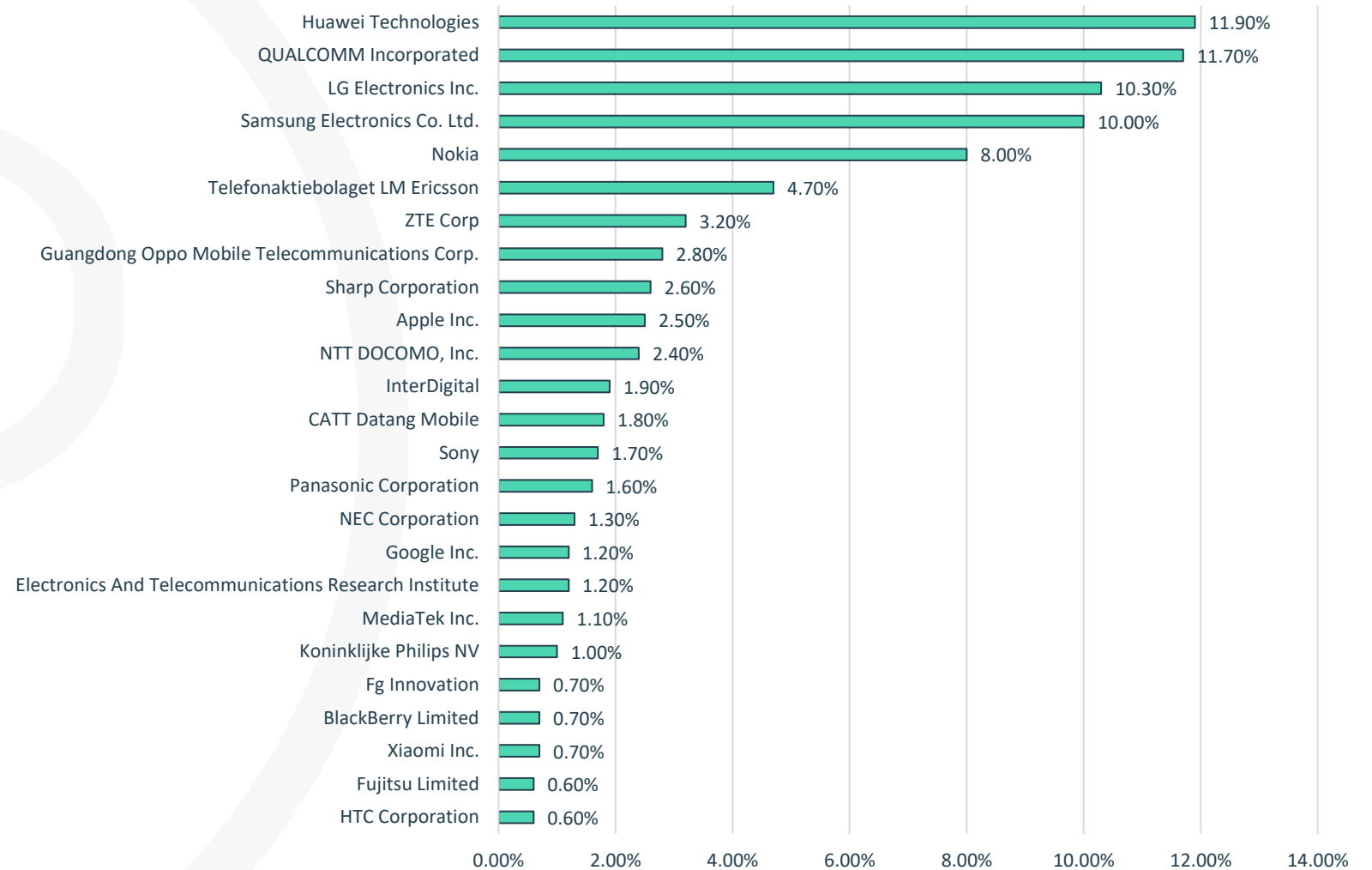
➤ Share of SEP holders in top 50



Top 25 SEP Family Owner

- The top 10 SEP holders own **67%** of all SEP families
- The top 20 SEP holders own **83%** of all SEP families
- The top 25 SEP holders own **86%** of all SEP families

SEP Family Share (US or EP granted)



Likelihood of validity and essentiality

- Estimating the **statistical likelihood** of a portfolio including at least **one essential and valid patent** shows that even in pessimistic scenarios a portfolio of **250 patents** includes at least one enforceable SEP:

Validity	pessimistic (30% valid)			optimistic (80% valid)			
	Essentiality	low (10%)	medium (25%)	high (50%)	low (10%)	medium (25%)	high (50%)
Portfolio size							
5		0.1413	0.3228	0.5563	0.3409	0.6723	0.9222
10		0.2626	0.5414	0.8031	0.5656	0.8926	0.9940
25		0.5330	0.8576	0.9828	0.8756	0.9962	1.0000
50		0.7819	0.9797	0.9997	0.9845	1.0000	1.0000
100		0.9524	0.9996	1.0000	0.9998	1.0000	1.0000
250		0.9995	1.0000	1.0000	1.0000	1.0000	1.0000

IV Joint licensing platforms and patent pools

SEP Licensing – Patent Pools

Patent pools:

- A patent pools aggregate patent ownership and offer a license program under a single license contract – “one-stop shop”.
- Many **economist claim positive** effects from pooling patents:
 - Pools may reduce **transaction costs** (reduce number of licensees)
 - Reduce multiple **marginalization** problem
 - **Clear** blocking positions (blocking patents)
 - **Facilitates** a technology to the public
- Pools are often created for standardized technologies due to the **nature of SEPs** that must be licensed in any implementation (no bundling).

SEP Licensing – Patent Pools

Potential Patent Pool Costs:

- Pools have substantial **set-up costs** (usually worn by the SEP owners that consider to join the pool, the pool initiator and/or the pool administrator).
- It is **difficult** for pools to **agree on revenue-sharing rules** if there are significant (perceived) differences in the value of essential patents or differences in the fees that the patent owners wish to receive.
- Pools may introduce **complexity** when pool members negotiate license or litigate individually.
- Broad pools may create **attractive positions for single firms to stay out**
- Some patent pools are set up to **set royalty rate** for a certain standard

AVANCI Pool Member and Outsider

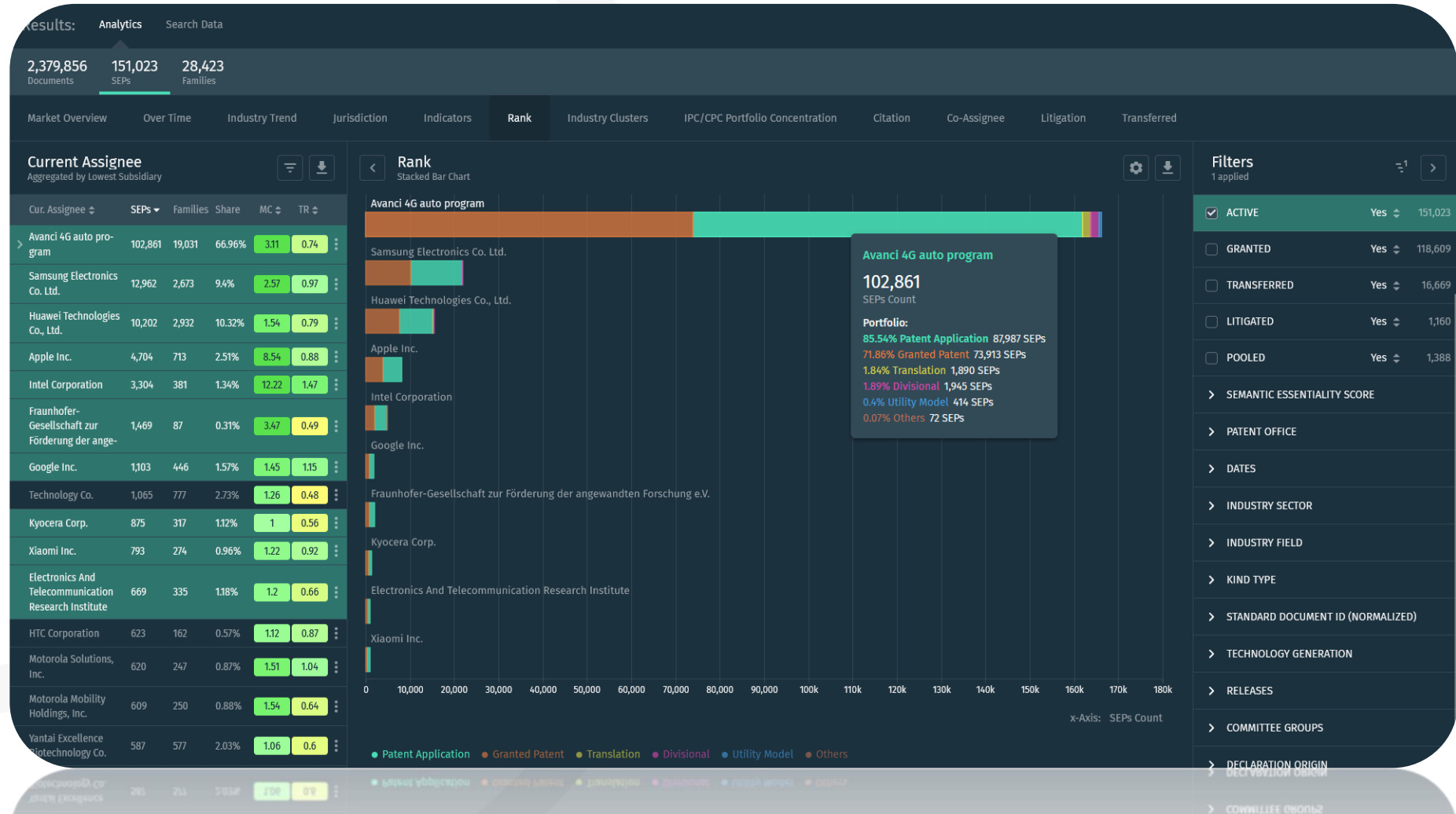
2G, 3G, 4G SEP owner AVANCI Member



2G, 3G, 4G SEP owner AVANCI Outsider



2G, 3G, 4G declared paten families



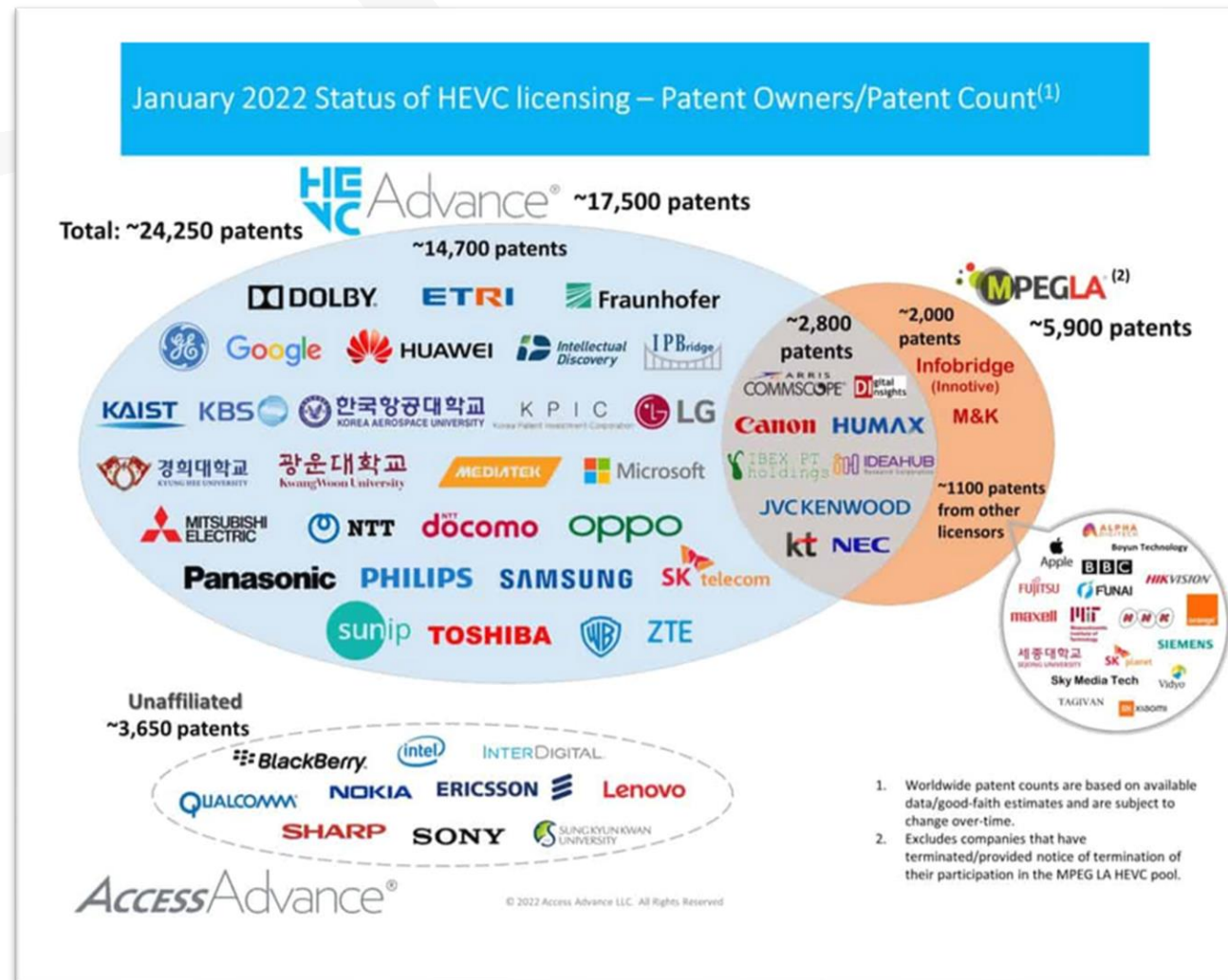
SEP Licensing – Patent Pools

Successful pools

- Many of the SEP licensing programs with the largest number of licensees are in the field of Audio/Video Coding.

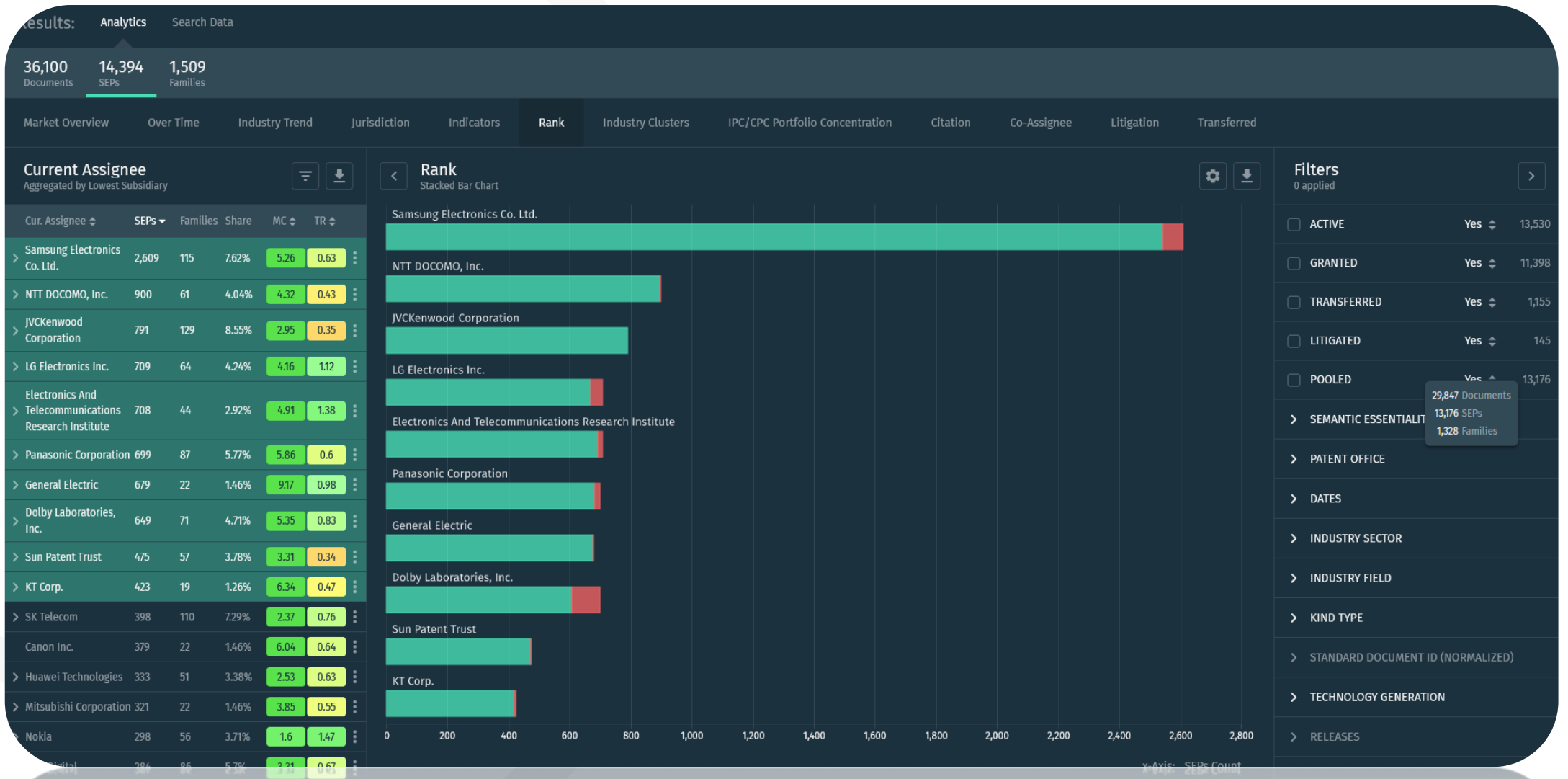
Pool	Administrator	Number of currently listed licensees
AVC/H264	MPEGLA	1,575
MPEG Audio	Sisvel	1,154
Advanced Audio Coding	Via Licensing	891
MPEG2	MPEGLA	822

HEVC pool situation



1. Worldwide patent counts are based on available data/good-faith estimates and are subject to change over-time.
2. Excludes companies that have terminated/provided notice of termination of their participation in the MPEG LA HEVC pool.

HEVC pool member as to IPlytics



VVC pool situation

MPEG LA Announces Development of VVC (Versatile Video Coding) Pool License

VVC expected to improve video compression efficiency and functionality

January 27, 2021 07:13 PM Eastern Standard Time

DENVER--(BUSINESS WIRE)--MPEG LA, LLC, the world leader in digital video patent pool licensing for nearly 25 years, announced today the development of a pool license for the next generation video coding standard known as VVC (Versatile Video Coding, also known as H.266 and MPEG-I Part 3) in order to offer the market a convenient one-stop alternative enabling VVC's wide adoption.

"MPEG LA applauds the work of leading technology innovators from around the world whose research and development investments have made VVC possible, and welcomes them to join MPEG LA's license development effort"

VVC has the potential to achieve the same level of perceptual quality as prior video codecs with up to a 50% improvement in video coding efficiency, thereby supporting 4K and 8K Ultra High Definition (UHD) and High Dynamic Range (HDR) video, telemedicine, online gaming, virtual 360° video and adaptive streaming applications.

"MPEG LA congratulates the Media Coding Industry Forum (MC-IF) and its participants for their pool fostering initiative preparing the market for a VVC pool license. MC-IF's work has been of immeasurable benefit, and MPEG LA was pleased to cooperate in that process. Building on MC-IF's work, MPEG LA is moving ahead with the next step listening to, working with and leading MC-IF participants and others to make yet another breakthrough generation of digital video compression technology widely accessible to the market under reasonable, trusted, transparent and non-discriminatory licensing conditions," said Larry Horn, President and CEO of MPEG LA.

"MPEG LA applauds the work of leading technology innovators from around the world whose research and development investments have made VVC possible, and welcomes them to join MPEG LA's license development effort," said Bill Geary, MPEG LA's Vice President of Business Development.

To participate in the initial VVC license development meeting, parties that believe they have patents essential to the VVC standard are invited to submit them to MPEG LA in accordance with the submission procedures at <https://www.mpegla.com/vvc/>.

Although only issued patents will be included in the license, patent applications with claims that owners believe are essential to the VVC standard and likely to issue in a patent also may be submitted in order to participate in the license development process.

MPEG LA, LLC

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Access Advance Launches VVC/H.266 Video Patent Pool

JULY 1, 2021

SHARE   

Includes innovative Multi-Codec Bridging Agreement that Provides Substantial Royalty Savings to Licensees in both the VVC and HEVC Advance Pools

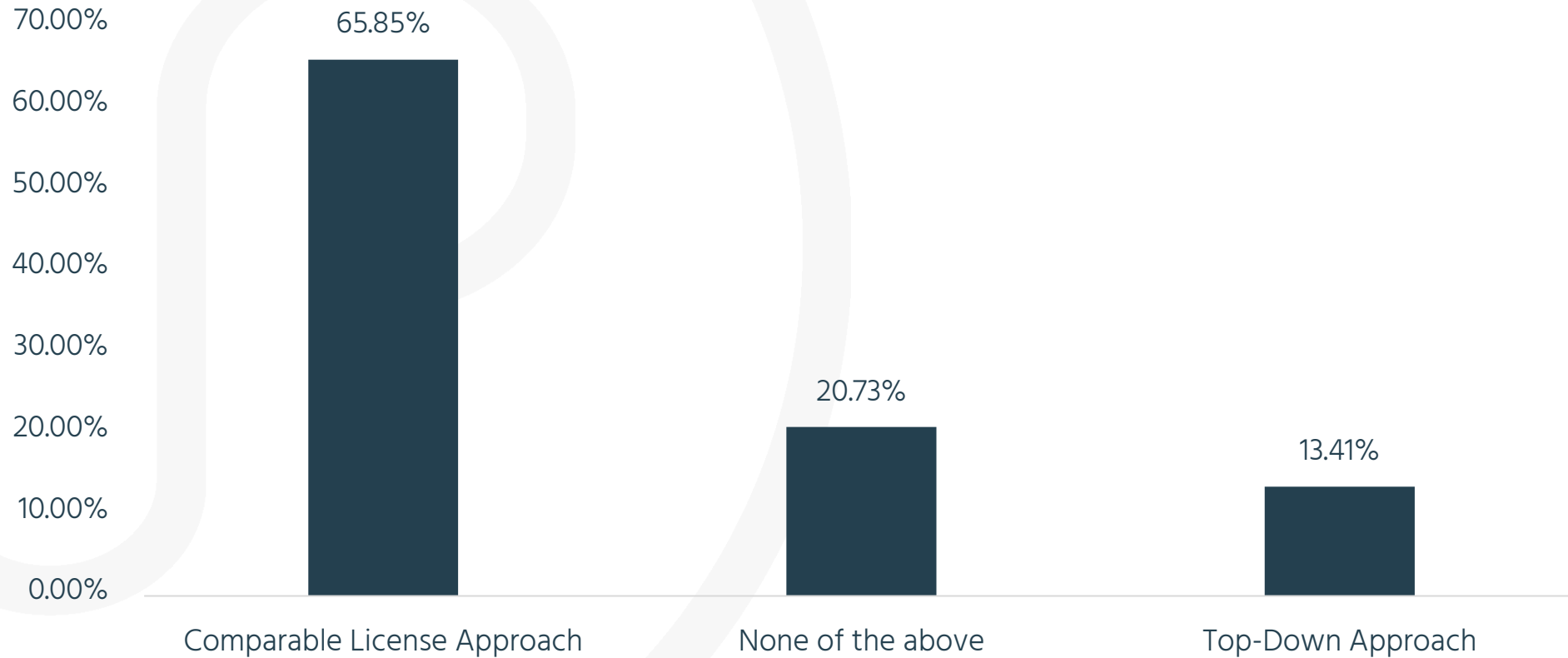
BOSTON – (July 1, 2021) – Building on the success of its HEVC Advance Patent Pool, Access Advance today announced the launch of the VVC Advance Patent Pool *and* the Multi-Codec Bridging Agreement ("MCBA"). VVC is the next generation video codec standard finalized less than one year ago, which provides significant improvements in video compression of up to 50% over HEVC, enabling a new generation of products, ever more beautiful video, faster downloads, and improved savings on storage.

The license structure of the new VVC Advance Pool mirrors that of the HEVC Advance Platform Pool License recently announced, with royalty rates and caps set at a **modest 25% increase** over the equivalent HEVC Advance License structure. Please see <https://www.accessadvance.com/vvc-advance-patent-pool-royalty-rates-summary>.

v Bilateral SEP licensing

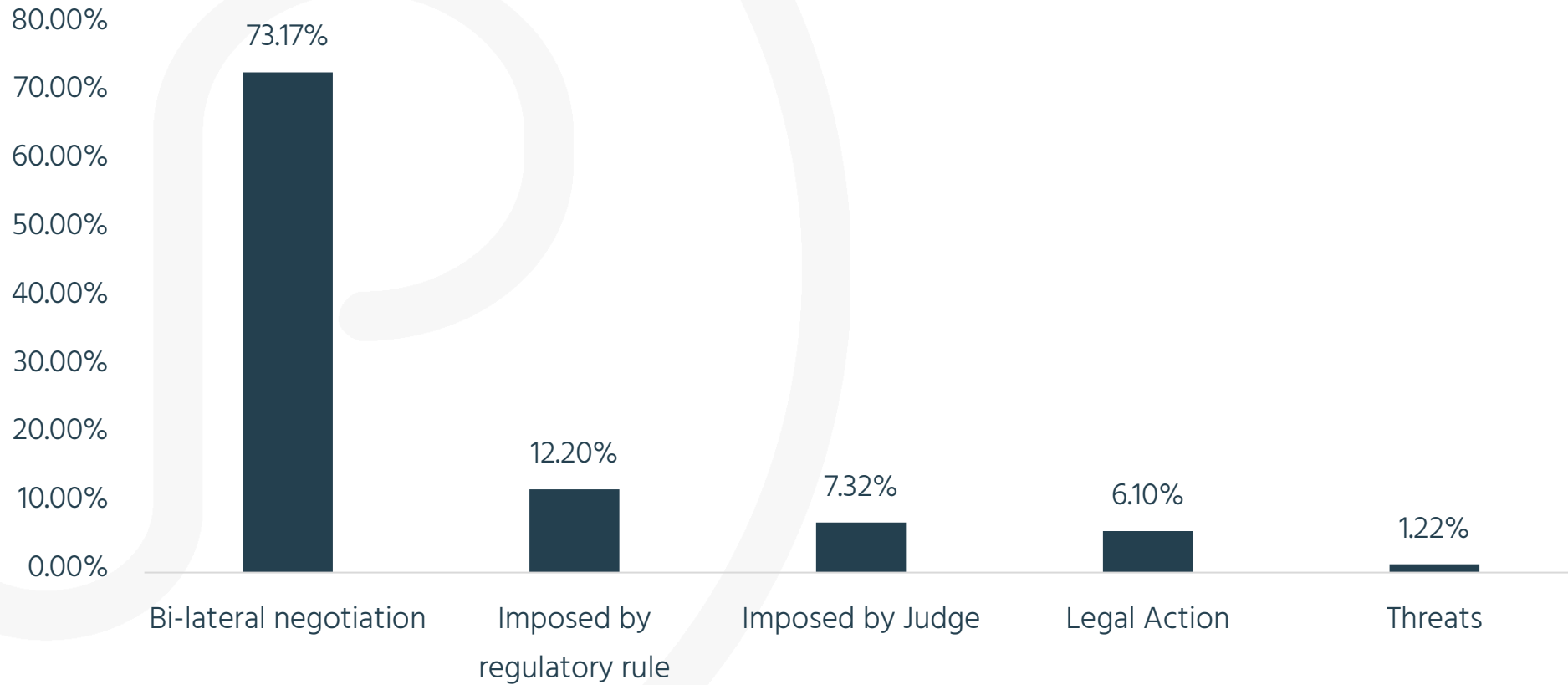
Poll Question Results

Q1: What is in your experience the more accurate approach to determine FRAND? (N=182)



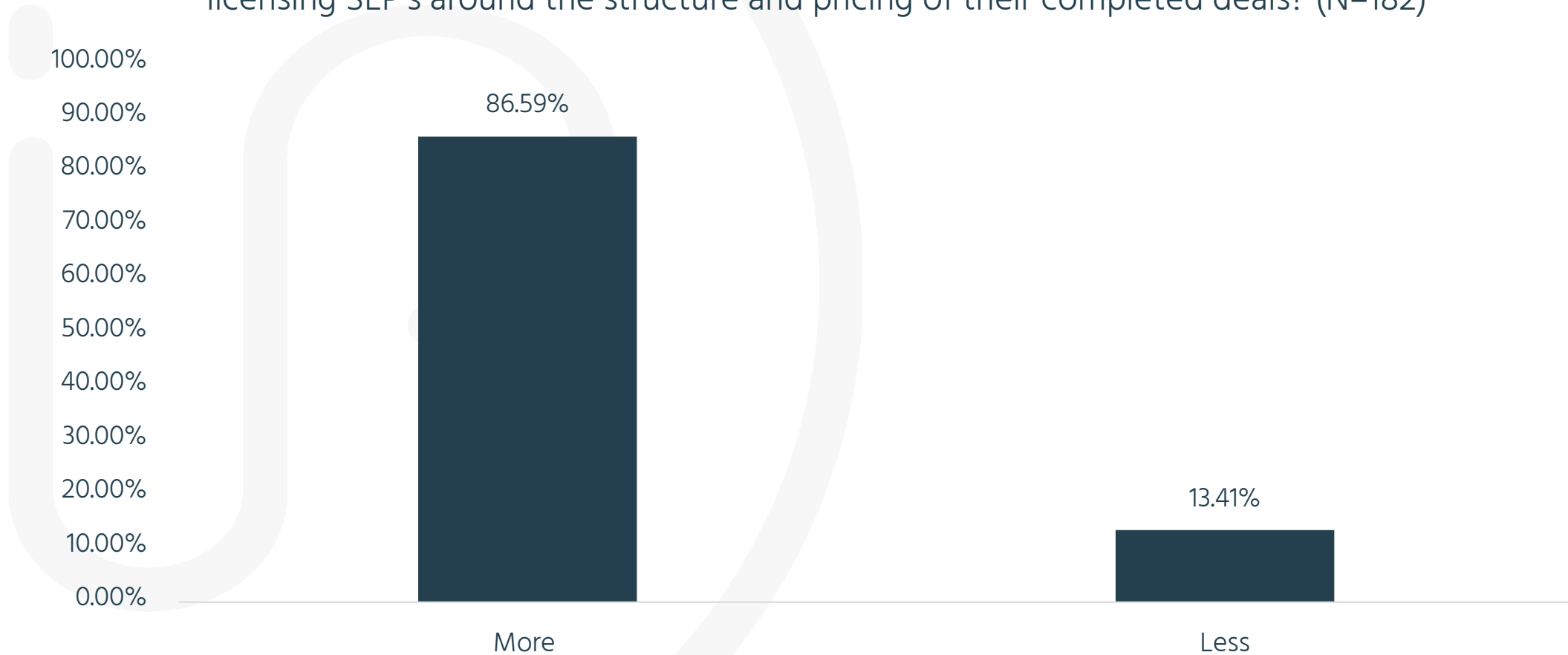
Poll Question Results

Q2: What is in your opinion the best way for companies to decide on the value of SEP portfolios? (N=182)



Poll Question Results

Q3: Do you think there should be more or less transparency by companies licensing SEP's around the structure and pricing of their completed deals? (N=182)



VI Identifying, counting and valuating SEP portfolios

*“...in assessing a FRAND rate
counting patents is inevitable...”*

Justice Birss concludes in Unwired Planet vs. Huawei

Challenges for top-down approaches

SEP portfolios are dynamic in size, value and market share

- - Patents may expire, laps, revoked or invalidated
 - + More patents are filed, pending patents are granted
 - The change of patent **ownership** (SEPs 2x more often than other patents) may **decrease** or **increase** SEP portfolios significantly
 - **New versions of standards** are published where newly integrated **sections** are eventually fully **mappable to claims** of patents that were not essential before
 - **The overall number of SEPs** for a standard changes (denominator) which changes the **SEP owner's SEP portfolio** (numerator) **share**
- **The size, value and share of SEP portfolios may significantly change over time!**

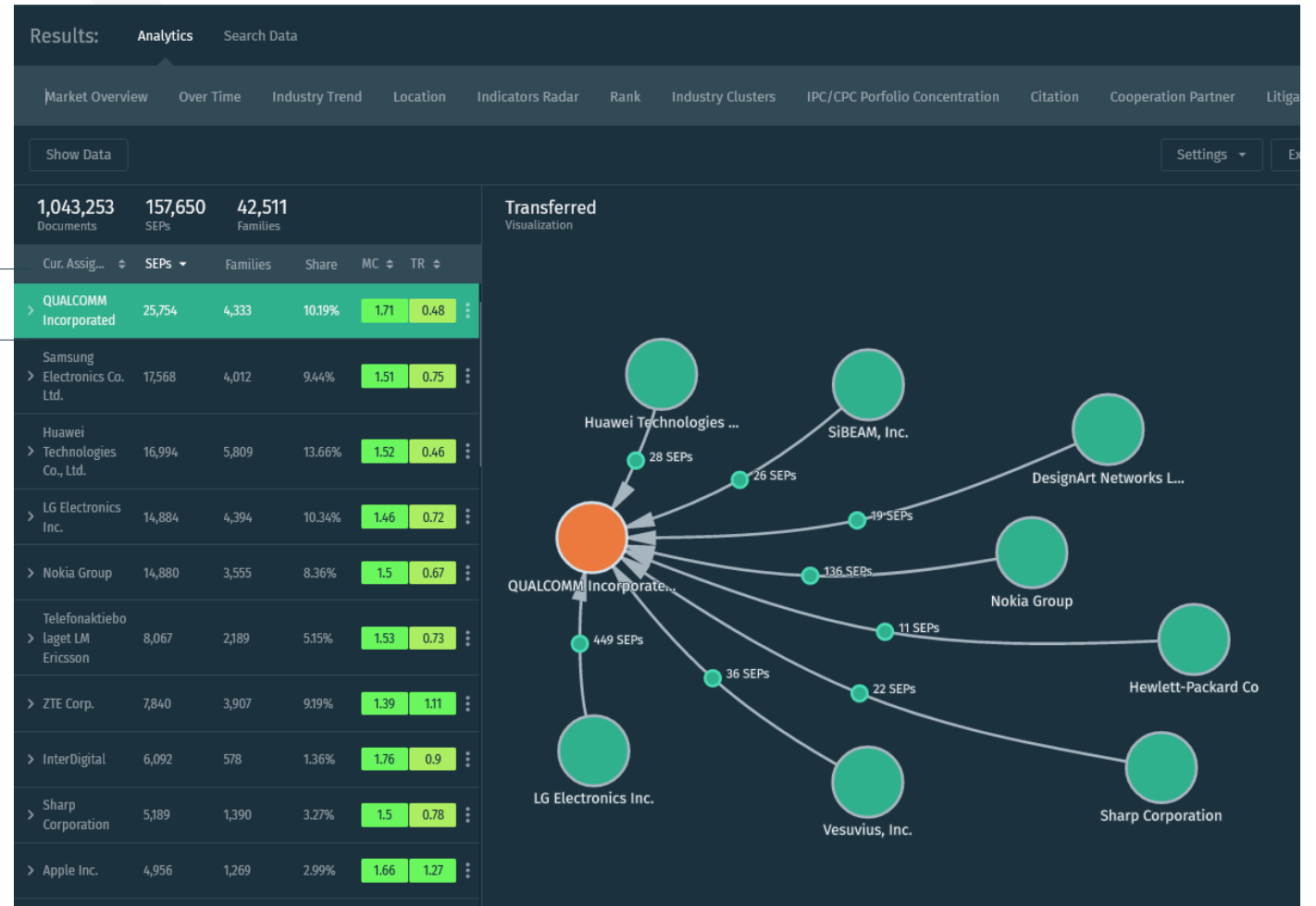
Corporate Tree Data

- The company portfolio analysis aggregates patents as to the **ultimate parent company**

	1,043,253 Documents	157,650 SEPs	42,511 Families			
Cur. Assig...	SEPs	Families	Share	MC	TR	
QUALCOMM Incorporated	25,754	4,333	10.19%	1.71	0.48	
QUALCOMM Incorporated	25,171	4,316	10.15%	1.7	0.46	
SnapTrack, Inc.	328	24	0.06%	2.26	1.6	
Qualcomm Flarion Technologies,	168	18	0.04%	1.79	1.46	
Digital Fountain, Inc.	95	8	0.02%	2	0.36	

Latest assignee data

- The portfolio analysis aggregates patents as to the current parent company



5G Standard specifications defined by 3GPP

- Different TS versions are subject to different releases and to different generations.

5G
(Release 15 & 16)

4G
(Release 13 & 14)

3GPP Portal

Specification #: 23.008

General	Versions	Responsibility	Related
CT#88-e	16.3.0	2020-07-06	ETS I TDoc CR
CT#87-e	16.2.0	2020-03-30	ETS I TDoc CR
CT#86	16.1.0	2019-12-20	ETS I TDoc CR
CT#85	16.0.0	2019-09-18	ETS I TDoc CR

Release 15(Spec is UCC for this Release) **Latest Remark:**

Meetings	Version	Upload date	Comment
CT#83	15.7.0	2019-03-22	ETS I TDoc CR
CT#82	15.6.0	2018-12-22	ETS I TDoc CR
CT#81	15.5.0	2018-09-24	ETS I TDoc CR
CT#80	15.4.0	2018-06-18	ETS I TDoc CR
CT#79	15.3.0	2018-03-27	ETS I TDoc CR
CT#78	15.2.0	2017-12-21	ETS I TDoc CR
CT#77	15.1.0	2017-09-18	ETS I TDoc CR
CT#76	15.0.0	2017-06-19	ETS I TDoc CR

Release 14(Spec is UCC for this Release) **Latest Remark:**

Meetings	Version	Upload date	Comment
CT#78	14.4.0	2017-12-21	ETS I TDoc CR
CT#77	14.3.0	2017-09-18	ETS I TDoc CR
CT#76	14.2.0	2017-06-19	ETS I TDoc CR

Counting raw data can easily produce
misleading analysis results

Data enhancement – ambiguous patent numbers

Submission of wrong patent numbers

- **Typos** or an **incorrectly transposed patent number** result in a match of the declared SEP to the wrong patent family.

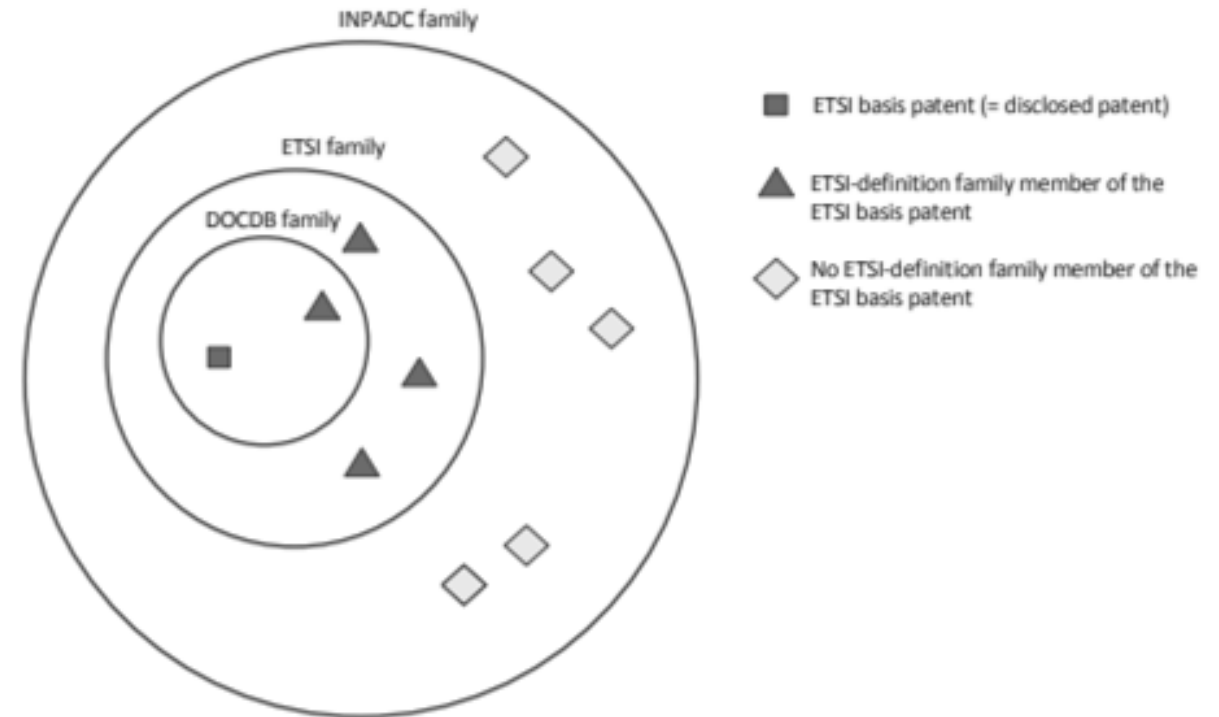
IPLYtics cleans out wrong patent numbers - **we identified over 3,000 cases** of false positives

- IPLYtics therefore only integrates declared patents in its database the
 - declared **company name** matches the applicant/assignee or highest parent
 - **IPC/CPC code** matches other declared patent's IPC/CPC
 - **Prio date** matches other declared patent's prio date
- Final manual check needed to **rule out false negatives!**

Data enhancement – missing family counterparts

ETSI Patent Family – basis patent

- The FRAND obligation covers all ETSI family (simple family DOCDB) members of initially declared so called “**basis patents**”. In other words, the ETSI FRAND obligation only requests the **declaring company to declare at least one patent family member** (ETSI family definition) assuming all other family members are covered by the FRAND commitment.

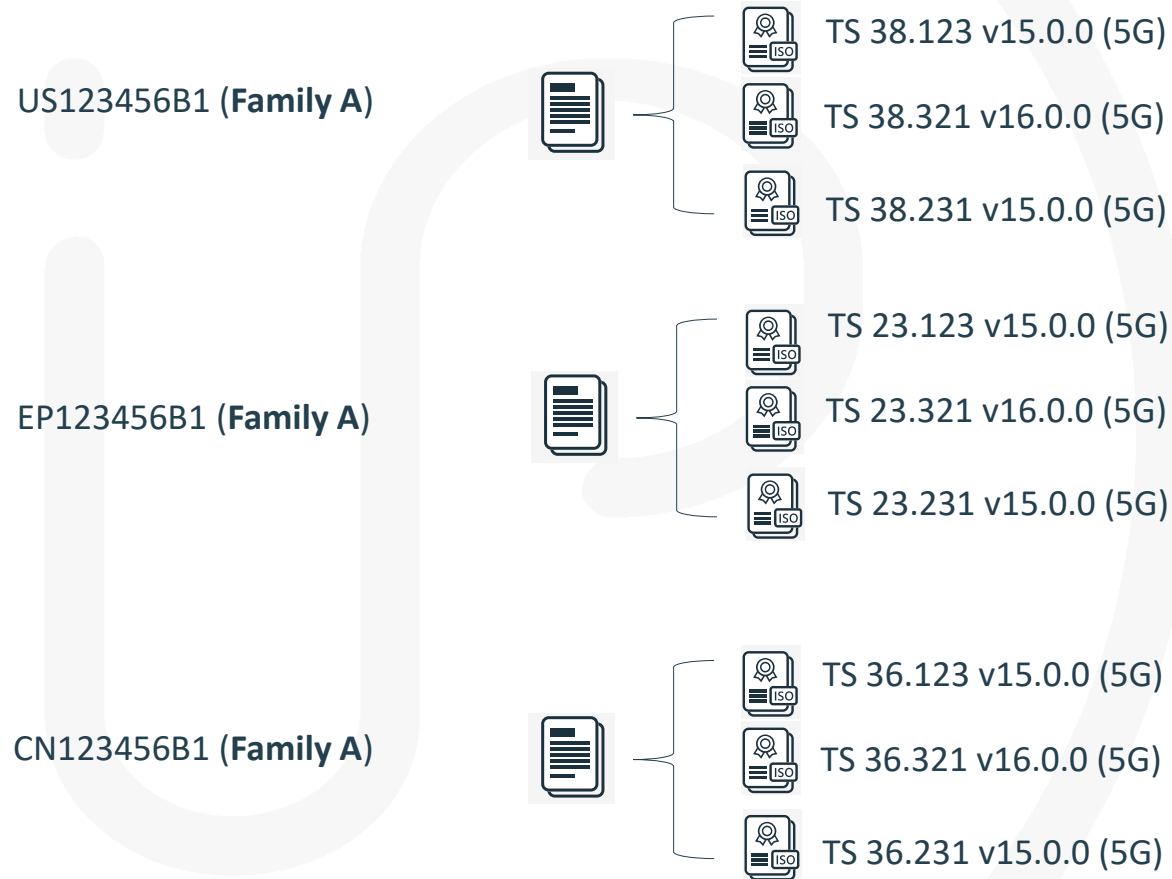


Data enhancement – missing family counterparts

Patent Family Expansion - ETSI

- **ETSI expands its database** by ETSI family members through the **API of the worldwide.espacenet.com**, however this extension **does not cover** many declared “basis patent” from offices such as WO, JP, KR and CN.
- IPlytics therefore matches the missing “basis patent” family members to **IP 5 granted patent family counterparts**.
- As of June 2022, IPlytics added **56,882 US, EP, CN, KR and JP patent counterparts** where at least one family member (ETSI family definition) was declared.

Distinct family counting



3 patents, 1 patent family declared to 5G

Query Builder

Untitled Query

Edit

Code Preview

Quick Help

Select

All

e.g. biotech, 3D print*, car or vehicle

...

AND

Technology Generation

Select...

...

AND

Standard Setting Orga...

e.g. ETSI OR ISO OR IEEE



Add Query

Related Keywords:

Search

Save

Load

History

Reset

Visual

Expert

Results:

Analytics

Search Data



Results: Analytics

Currently no analytics visible. Please use the query builder above to construct a relevant search.

Need Help?

Cleaning the raw data is not enough to
determine SEP portfolios

SSO declaration practice: “maximal declaration” situation

- ❖ Often companies submit patent declarations when patents are **still pending**, and the standard is **still evolving**.
 - Thus, patent **claims** as well as **standards** specifications are likely **subject to change** after the declaration has already been submitted. By design of the declaration practice some of these self-declared **patents** end up being **not essential**.
 - Approximately only about 20-47% of all ETSI declared **2G/3G/4G** patents are essential (*Unwired Planet v. Huawei, TCL v. Ericsson*)
 - Approximately only about 10-15% of all ETSI declared **5G** patents are essential (*IPlytics sample data, Bird & Bird report*)

SEP determination is a challenge

- Understanding whether a patent is essential or not is **expensive** and **time-consuming** requiring:
 - **SME review**, claim charting, attorney legal opinion and review is very expensive when done rigorously
 - **Slow manual human** processes - Legal teams and SMEs are limited resources
 - **Claim charting a portfolio of e.g. 200 patents takes almost a year (for one SME) and may need budgets of \$500k-\$600k for outside SME and counsel.**

SEP Claim Charting according to international experts

	SEP evaluation rigorousness level description	Average costs in €	Median costs in €	Min. costs in €	Max costs in €
A	Light SEP evaluation: Rough determination whether any TS could be relevant for given patent at all	355 €	184 €	31 €	1,285 €
B	Quick SEP evaluation: Rough determination, which TS could be relevant for which claim features of the given patent	789 €	367 €	92 €	2,753 €
C	Specific SEP evaluation: Determination of specific standard sections for each claim feature of the given patent	1,486 €	734 €	734 €	3,670 €
D	Claim chart: Specific SEP evaluation plus arguments on mapping, i.e., specific correspondence	4,159 €	3,670 €	734 €	8,808 €
E	Claim chart as to d) covering 2 different standards (e.g. 4G/5G)	6,117 €	6,239 €	4,404 €	8,808 €
F	Claim chart as to d) with potential objections on essentiality	7,095 €	7,707 €	2,936 €	8,808 €
G	Claim chart as to d) with potential objections on novelty, inventive step, and/or added subject-matter	7,860 €	8,533 €	5,872 €	8,808 €

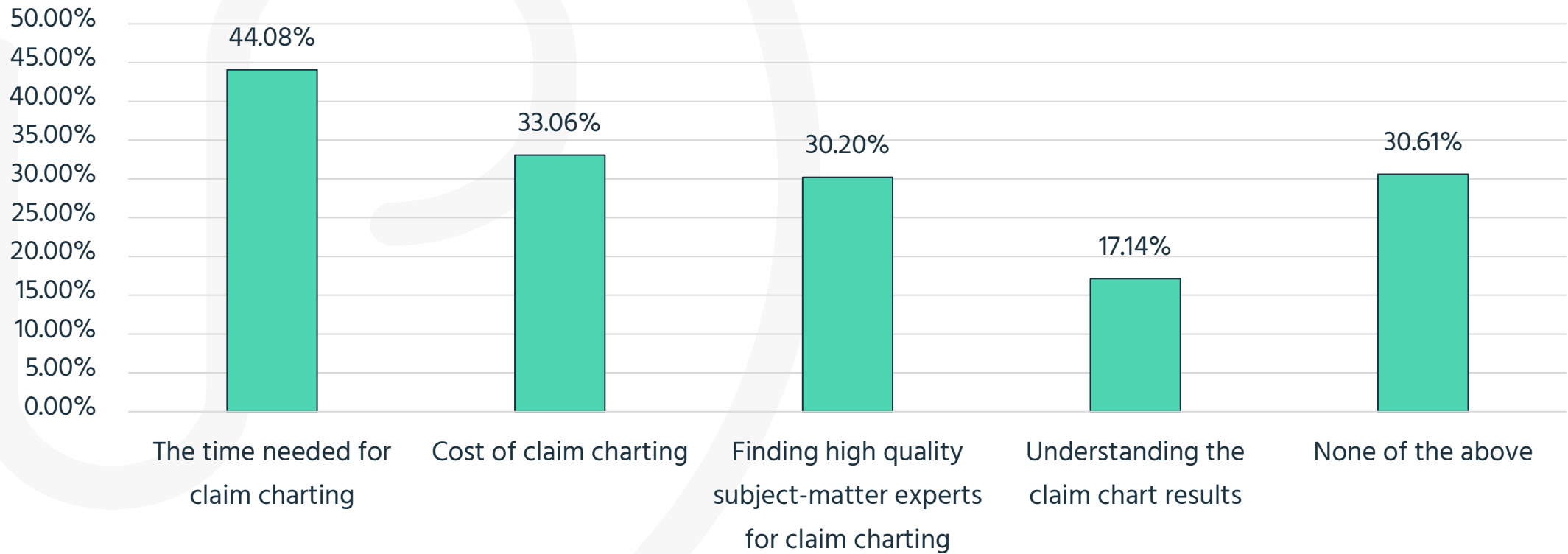
SEP Claim Charting according to international experts

	SEP evaluation rigorousness level description	Average minutes	Median minutes	Min minutes	Max minutes
A	Light SEP evaluation: Rough determination whether any TS could be relevant for given patent at all	58	30	5	210
B	Quick SEP evaluation: Rough determination, which TS could be relevant for which claim features of the given patent	129	60	15	450
C	Specific SEP evaluation: Determination of specific standard sections for each claim feature of the given patent	243	120	120	600
D	Claim chart: Specific SEP evaluation plus arguments on mapping, i.e., specific correspondence	680	600	120	1,440
E	Claim chart as to d) covering 2 different standards (e.g. 4G/5G)	1,000	1,020	720	1,440
F	Claim chart as to d) with potential objections on essentiality	1,160	1,260	480	1,440
G	Claim chart as to d) with potential objections on novelty, inventive step, and/or added subject-matter	1,285	1,395	960	1,440

SEP determination is a challenge

What is your biggest challenge with regards to SEP determination?

Multiple answers possible, N=245



Patent declarations and
essentiality tests
→ **Claim Chart Sampling**

Statistical Sampling Methods

- ✓ Most statisticians agree that the **minimum sample size** to get any kind of meaningful result is **100**:
 - If your SEP declaration portfolio is less than 100 assets, then you really need to claim chart all of them.
- ✓ A good maximum sample size is usually around **10% of the population**, as long as this does **not exceed 1,000**:
 - For example, in a population of 5,000 patents, 10% would be 500. In a population of 200,000, 10% would be 20,000. This exceeds 1,000, so in this case the maximum would be 1,000.
 - Claim charting more than 1,000 patents won't add much to the accuracy given the extra time and money it would cost.

Statistical Sampling Methods

- The selection of patents to be mapped followed a **Statistical Sampling Methods** (used in Political Polling) ensuring no selection bias and providing both:
 - true positive values, patents fully mapped to a standard specification (verified SEPs) as well as
 - true negative values, patents that could not be mapped to any standard specification (verified non-SEPs).
- This method ensures a **balanced training data set** randomly selected proportionally across:
 - ✓ **Patent owners,**
 - ✓ **Technology modules** (as to groups e.g. RAN1, RAN2 and so on)
 - ✓ **IPC/CPC main classes**
 - ✓ **Patent priority dates**

IPlytics 5G Essentiality Sample

- IPlytics hosts a data set of **2,000** 5G declared **patent families (EP or US granted)** mapped by independent experts.
- The claim charting followed a **double-blind checking approach** where for each patent at least 2 experts mapped the patents:
 1. **Cellular technology expert** had on average 6 hours to conduct the initial claim section mapping.
 2. **US or EP patent attorneys** had on average 3 hours to double check and verify the mapping.
- In cases of disagreement both experts set up a call to discuss and conclude on a final **mapping status**: fully mappable, partially mappable, not mappable
- In total **18,000 hours** were spent on the mapping of the 2,000 5G declared **patent families**

Level of essentiality

- a) **Full Mapped:** All the claim elements were found in the standard specification. A claim chart was made to justify that the patent is essential (100% Mapping).
- b) **Partial Mapped:** Most of the claim elements were found in the standard specification, except one or two concepts. A mapping chart was made to justify that the patent is relevant (More than 60 % Mapping).
- c) **Not Mapped:** All the claim elements were not found in the standard specification and the patent is found to be not relevant (If less than 50% Mapped).

Statistical Sampling Methods

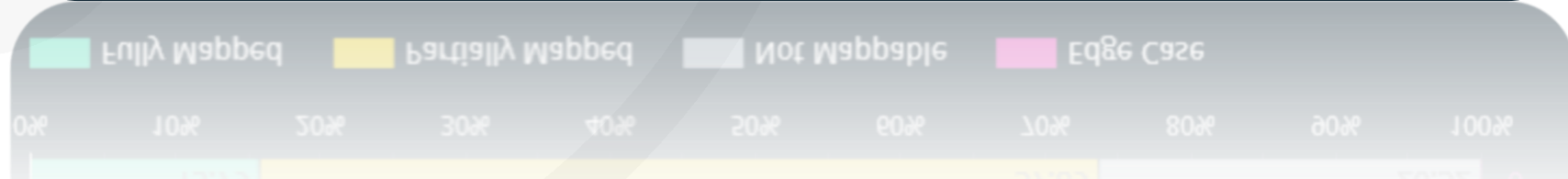
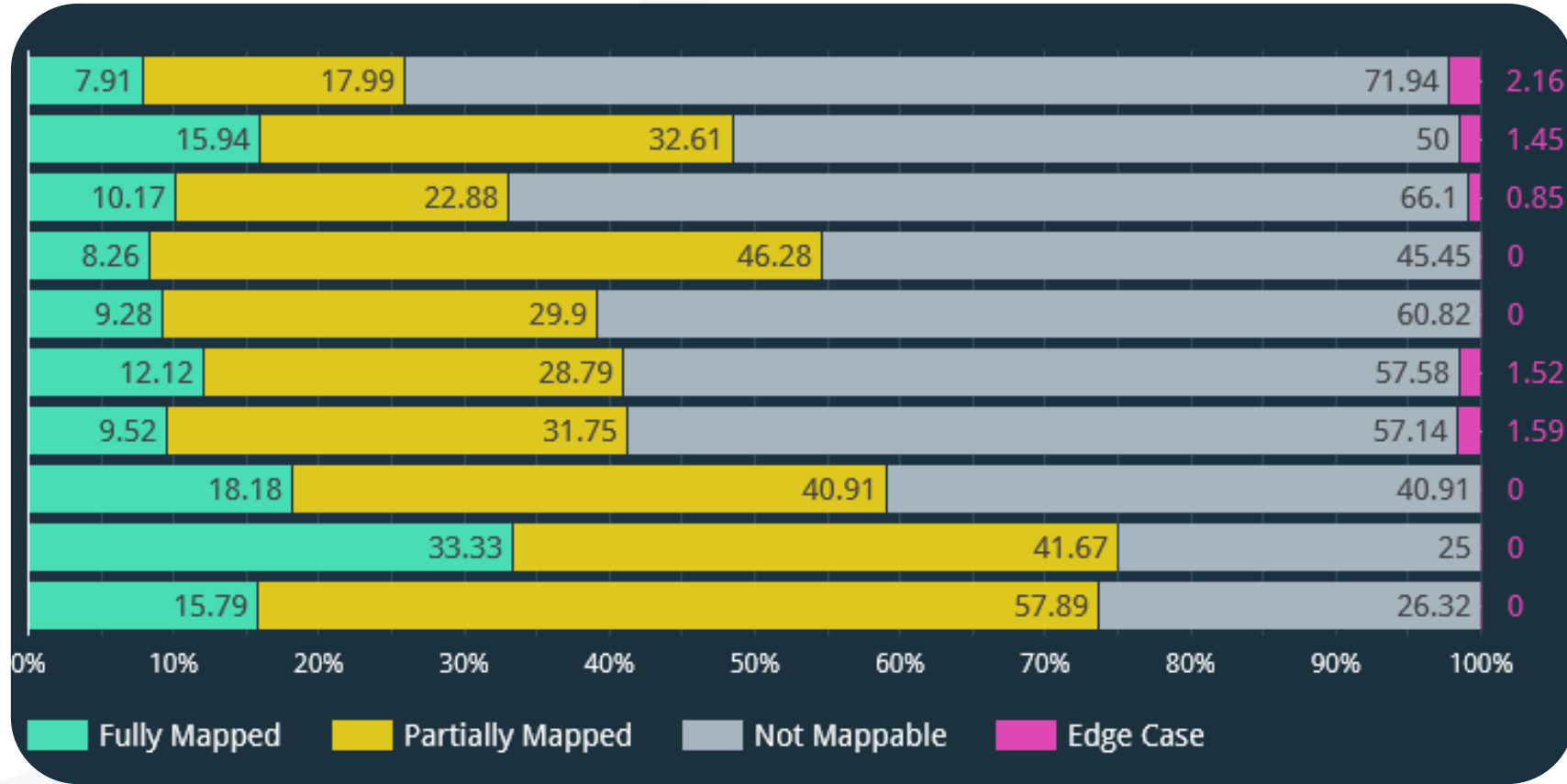
Random Sampling results:

- ✓ As to our random sampling of 2,000 5G declared EP or US granted patents we identify an overall:
 - **essentiality rate of 15% for 5G declared patents**, compared to about
 - **25% for 4G declared patents.**
- ✓ The essentiality rate very much differs across patent owners.

Random Sampling limitations:

- ✓ The essentiality rate only related to EP or US granted patents declared to 5G up until October 2021.
- ✓ Only the top 10 5G patent owner portfolios deliver accurate results as here more than 100 patents have been mapped.

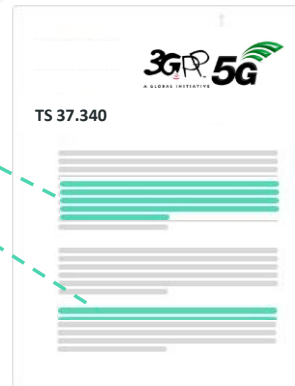
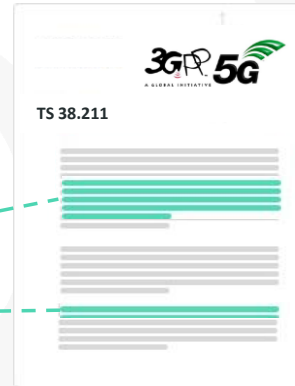
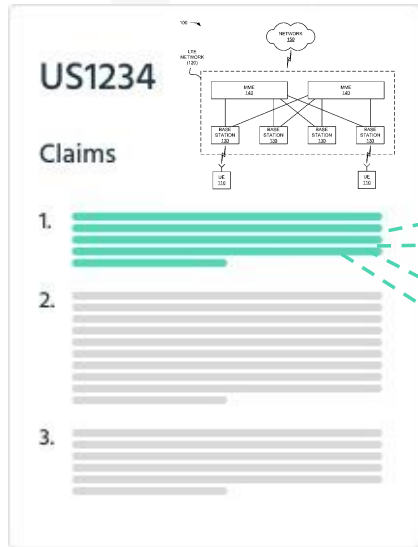
Essentiality Rate Across top 10 SEP owners



Patent declarations and
essentiality tests
→ **Data Driven Essentiality
Prediction**

Semantic Essentiality Scores (SES) can be a
first efficient step towards SEP portfolio
determination

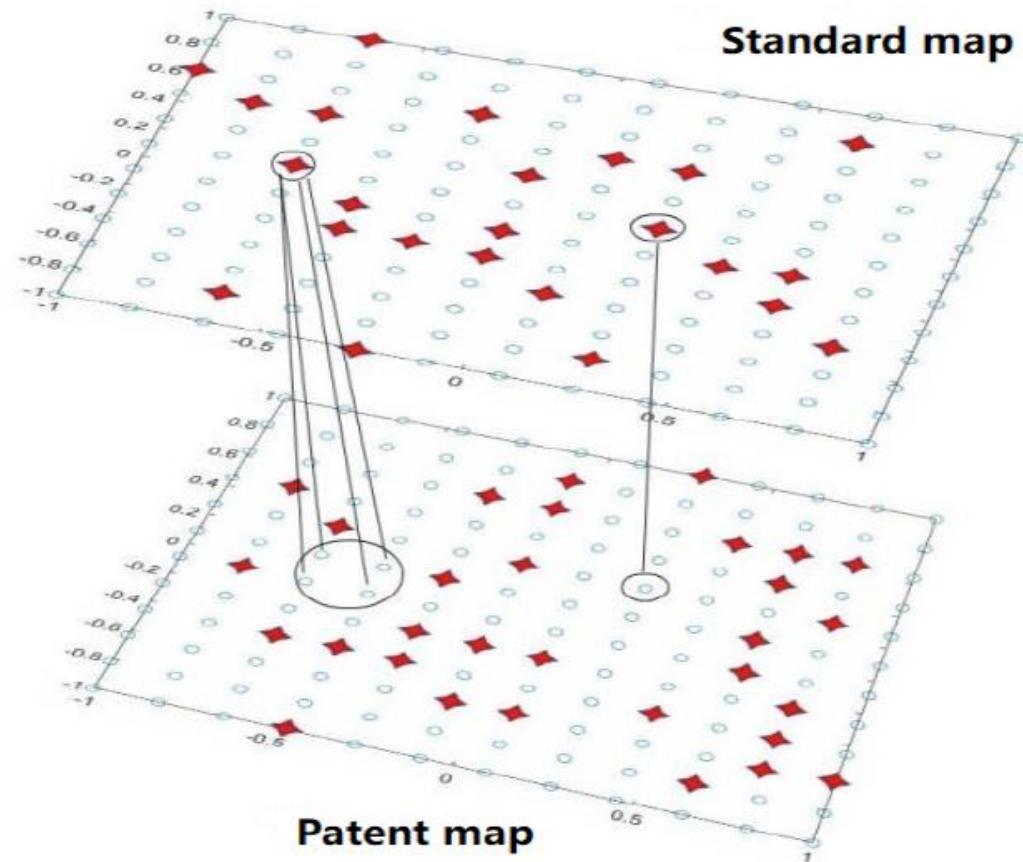
Claim language vs. standards language



Claim language and language in standard specifications may be very **different**:

- **Patent claims** are drafted by patent attorneys using **broad terminology** so that the claims apply to as many applications possible.
- **Standard specifications** or standards contributions are written by technical engineers that develop the standard and **use very specific language**.

Semantic analysis of patent claims and standards



- While claims and standards describe the very same topic and thus can be mapped and charted by experts – the **actual language used can be very different.**
- To overcome this, we **train a semantic model** that understands the context of claims and standards and recognizes the use of different expressions for certain concepts to identify claim elements.
- We use **claim charts** manually created by experts as **training data.**

SES – Patent claim and standard section side by side

Overview 44 Family Members 1 Citing Patents **Semantic Essentiality 80%** 1 Literature Standards 1 Companies

Semantic Essentiality Score: **80%**

Publication Number	US9641655B2	Standard Document Id	TS 38.322 v16.2.0
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SEMANTICALLY SIMILAR CLAIM 6

6. A wireless transmit receive unit (WTRU) comprising: a PDCP entity configured to receive a PDCP service data unit (SDU) from an upper layer entity, start a PDCP discard timer upon receiving the PDCP SDU from the upper layer entity, process the PDCP SDU to form a PDCP protocol data unit (PDU), send the PDCP PDU to a radio link control (RLC) entity for transmission, and discard the PDCP SDU based on either the PDCP discard timer expiring or receiving a PDCP status report that acknowledges receipt of the PDCP SDU by a receiving PDCP entity; and the RLC entity configured to discard an RLC SDU corresponding to the PDCP PDU based on either receiving an indication of PDCP discard from the PDCP entity or re-establishment of RLC.

SEMANTICALLY SIMILAR SECTION 5.4

When indicated from upper layer (i.e. PDCP) to discard a particular RLC SDU, the transmitting side of an AM RLC entity or the transmitting UM RLC entity shall discard the indicated RLC SDU, if neither the RLC SDU nor a segment thereof has been submitted to the lower layers. The transmitting side of an AM RLC entity shall not introduce an RLC SN gap when discarding an RLC SDU.

SES – Sort and refine patents as to essentiality score

Declaring Co...	SSO	SE Publ. No.	SE Stand. Doc. ID	SE Section No.	SE Claim No.				
Samsung Electronics Co. Ltd.	ETSI	US9049718B2	TS 38.322 v16.2.0	5.2.2.1	17	82%	82%	<input type="checkbox"/>	Yes 15
Samsung Electronics Co. Ltd.	ETSI	US9049718B2	TS 38.322 v16.2.0	5.2.2.1	17	82%	82%	<input type="checkbox"/>	Yes 15
Samsung Electronics Co. Ltd.	ETSI	US9049718B2	TS 38.322 v16.2.0	5.2.2.1	17	82%	82%	<input type="checkbox"/>	Yes 0
InterDigital Holdings, Inc.	ETSI	US9641655B2	TS 38.322 v16.2.0	5.4	6	80%	80%	<input type="checkbox"/>	LITIGATED Yes 1
Samsung Electronics Co. Ltd.	ETSI	US10805048B2	TS 38.322 v16.2.0	5.6.1	5	79%	79%	<input type="checkbox"/>	POOLED Yes 0
Samsung Electronics Co. Ltd.	ETSI	US10602563B2	TS 38.322 v15.5.0	5.2.2.1	1	81%	81%	<input type="checkbox"/>	ESSENTIALITY SCORE 62-100%
Samsung Electronics Co. Ltd.	ETSI	US10602563B2	TS 38.322 v16.2.0	5.2.2.1	1	81%	81%	<input type="checkbox"/>	0 documents without Essentiality Score

No. SES

82%

Connecting the data points

Correlating patents and standards – **First Applicant Contributor** comparison

- First applicant (**Company Inc.**)
- US1234567B1 declared to TS 38.473 - RAN3
- Contributor (**Company Inc.**)
- Submitted accepted and approved contribution for TS 38.473 at RAN3 meeting



Connecting the data points

Correlating patents and standards – **Inventor Attendee comparison**

- Inventor (Peter Brown, Company Inc.)
- US1234567B1 declared to TS 38.473 - RAN3

- Attendee (Peter Brown, Company Inc.)
- Attended RAN3 Meetings



Connecting the data points

Scoreboard to valuate declared patents:

- Claim sections similarity, inventor attendee overlap, first applicant contribution overlap, FWD citation, NPL citation, timing and classification.



Query Builder

Untitled Query

Edit

Code Preview

Quick Help

Select All e.g. biotech, 3D print*, car or vehicle

ANC Technology Generation Select...

ANC Current Assignee e.g. Nokia, "Volkswagen AG" OR Siemens

Add Query

Related Keywords:

Search

Save

Load

History

Reset

Visual

Expert

Results: Analytics Search Data



Results: Analytics

Currently no analytics visible. Please use the query builder above to construct a relevant search.

Need Help?

VII How to make use of IPlytics across departmental

SEP licensors (patent owners)

SEP **licensors** use of IPlytics Platform:

- Align R&D investments, standards development, patent prosecution, patent portfolio management and licensing/monetization strategy to **file valid and essential patents** and to **commercialize SEPs** in world-wide licensing campaigns.
- Compare SEP portfolios for **cross-license** negotiations and **monitor competition** making sure to sustain revenues both on the downstream product market as well as upstream licensing market.
- Monitor **competitors' standards development** investments (contribution count) and identify new standards groups to maintain leading positions in standards development.



Use Cases

Patent portfolio manager:

- Compare and value your portfolios against competitors
- Identify strength and weaknesses to further develop your portfolio
- Support keep/kill decisions in patent portfolio pruning analysis



Licensing executives / deal maker:

- Find gold nuggets in your portfolio to prepare licensing negotiations
- Identify patent portfolios to commercialize/license or use for acquisition
- Use SES to weed out 'weaker' patents, focusing resources on higher ranked patents



SEP licensees (standards implementers)

SEP licensees use of IPlytics Platform:

- Value and determine SEP portfolios offered for license. Prepare for **FRAND negotiation**. Identify the numerator and denominator to measure the patent holder's market share.
- **Identify standards subject to SEPs** in the complex value chain of suppliers as SEP holder approach OEMs or at least Tier 1 supplier
- Monitor SEP filing, SEP change of ownership and litigation to **quantify risks and plan royalty payments**.
- **Identify** industry related (e.g. V2X or M2M) **standards development initiatives** to have a seat at the table when future connectivity technology is developed.



Use Cases



Strategic IP attorneys / legal divisions:

- Use IPlytics PES in discovery
- Use PES before claim charting/review to focus on most important patents first
- Make use of objective data to consider for FRAND preparation, negotiations, argument formulation



Licensing executives / deal maker:

- Use IPlytics to prepare for FRAND negotiations
- Use IPlytics to understand the share of third-party SEP portfolios
- Identify litigation trends in your industry for standards you integrate

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Meet the IPlytics team in person

- ❖ [IPBC Asia](#) in Tokyo Japan, 31 October -2 November 2022
- ❖ [Patent Information Fair & Conference](#) Tokyo Japan, 9th-11th November 2022
- ❖ [IPWatchdog Masters Standardization & Patents](#) in Ashburn Virginia USA, Nov. 14th ,2022



The
SEP
Couch

with Tim Pohlmann

Contact

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