IP LYTICS

2023 - IPlytics - Closing the SEP Transparency Gap Part 1:

How to Deal with Data Accuracy, Over Declaration, and Blanket Declaration Challenges

Tim Pohlmann CEO @ IPlytics GmbH

Video Recording: https://youtu.be/-pcjdwdUpd0

2023

IPlytics Webinar Series 2023

I. Part 1: "How to Deal with Data Accuracy Challenges"
July 27th, 2023
Register: https://www.iplytics.com/events/upcoming/

II. Part 2: "How to Deal with SEP Determination Valuation Challenges"
August 22nd, 2023
Register: https://www.iplytics.com/events/upcoming/

III. Part 3: "How to Deal with FRAND Determination Challenges"
September 19th, 2023
Register: https://www.iplytics.com/events/upcoming/

IPLYTICS
PLATFORM

Today's Speaker

- **PhD & Post Doc.** TU Berlin, CERNA, MINES ParisTech.

- CEO and **founder of IPlytics**.

- **2023 IAM Strategist 300**. Recognized 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.

Today's Agenda

I. The Challenge of Retrieving Declared Patent Data

II. The Challenge of Matching Declared Patent Data

III. The Challenge of Cleaning Declared SEP Data

IV. The Challenge of Expanding Declared Patent Data

V. The Challenge of Ultimate Ownership Declared Patent Data

VI. The Challenge of Blanket Patent Declarations

VII. Takeaways.

IP LYTICS PLATFORM

I. The Challenge of Retrieving Declared Patent Data

How to retrieve declared SEP data?

Standard Setting Organization (SSO) Websites

- Declarations of potential SEPs are **not referenced on the final standard** but hosted on the **SSO's websites** such as *IPR.ETSI.org, IEEE LOA Records, IPR ITU-T, ISO Standards...*

- SOO's websites list all **declaration letters** that were submitted by the SSO's members.

- As to the SSO's bylaws members must make **timely declarations** about patents potentially essential to the standard.

   ➤ Some SSO's encourage **specific declarations** such as ETSI, ATSC, ISO, IEC

   ➤ Other SSO's allow **blanket declarations** such as IEEE or ITU-T

IPLYTICS
PLATFORM

Databases format differences - IEEE example

Std No.	Patent Owner	Patent Serial No. (if indicated)	Letter Date
802.11be	NXP B.V.	not indicated	29 Sep 2020
802.11ah	KT Corporation	not indicated	24 Sep 2020
802.11ax	LG Electronics Inc.	not indicated	27 Aug 2020
802.11-2016	Google LLC	US7492753, US7165205, CA2564395, CN1934789, CN102647193, EP1747613, EP2405581, ES2400950, IL177439, IN2012KN00029, IN2012KN00028, IN253220, JP4558037, KR100861893, PL1747613, TWI348831, US7143333, BRPI0514179, CN101032082, EP2387157, ES2421942, IN260932, JP4516602, KR100884698, PL2387157, RU2370886, US7236477, AR052021, US7493548	11 Mar 2020
802.11ac	Microsoft Technology Licensing, LLC	9,215,599 (US)	20 Dec 2019

Blanket declaration

Specific declaration

Databases format differences – **IPlytics integration**

➤ **IPlytics data integration of all *specific* and *blanket* patent declaration**

Blanket patent declaration

Specific patent declaration

2,198 Documents	**502** SEPs	**182** Families

Search · Expand by Family · Show / Hide

Publication No. ⬍	Kind Type ⬍	Title ⬍	Decl. Da... ⬍	Declaring Company ⬍	Standard Doc. ... ⬍
Not Available	Not Available	Not Available	2019-11-21	Apple Inc.	802.11-2012
Not Available	Not Available	Not Available	2019-11-21	Apple Inc.	802.11-2016
Not Available	Not Available	Not Available	2019-07-25	Huawei Technologies Co., Ltd.	802.11-1997,802.11-...
Not Available	Not Available	Not Available	2019-07-25	Huawei Technologies Co., Ltd.	802.11-1997,802.11-...
Not Available	Not Available	Not Available	2015-07-06	Intel Corporation	802.11
Not Available	Not Available	Not Available	2015-07-06	Intel Corporation	802.11
Not Available	Not Available	Not Available	2015-07-06	Not Available	IEEE 802.11
US20080031197A1	Patent Application	Relay-station assignment/re-assig...	2015-04-03	Nokia Corporation	802.11
US6738370B2	Granted Patent	Method and apparatus implementi...	2015-04-03	Nokia Corporation	802.11
US20050141494A1	Patent Application	Data transmission method, and sys...	2015-04-03	Nokia Corporation	802.11
Not Available	Not Available	Not Available	2015-04-03	Intel Corporation	802.11.2
US8023524B2	Granted Patent	Cooperative relay system enabling ...	2015-04-03	Nokia Corporation	802.11

IPLYTICS PLATFORM

Databases format differences - ETSI example

Work Item / Standard no.	Title	Version/Edition	Illustrative specific part of the Standard (e.g Section)
TS 38.331	NR; Radio Resource Control (RRC); Protocol specification	16.1.0	3.2 4.2.1 5.3.1.1 5.3.2 5.3.8.1 5.3.8.3 6.2.2 7.4

Declaration of TS

Declaration of version

Declaration of sections

Declaration of other patents

Declaration of basis patent

Patent Family ℹ️

External ID : 43203-1-EP-EPD

Application Number	Publication Number	Title	Proprietors	Country of Registration
Basis Patent				
EP20190184674	EP3570628 A1	HANDLING A CONNECTION IN A WIRELESS COMMUNICATION SYSTEM	BLACKBERRY LTD	EP European Patent Office
Other Members ℹ️				

IP LYTICS PLATFORM

Databases format differences - **ETSI example**

Basis patent declaration

Other member patent declaration

Databases format differences – **IPlytics integration**

➢ **IPlytics data integration of basis and other patents as well as TS, version and section information.**

TS and Version

Basis patent

Other patents

Section

Standard Document Id	TS 36.440 v9.0.0
Declaring Company	Telefonaktiebolaget LM Ericsson
Application as to Declaration	US19930136760
Application as to Declaration other	AU19890040740 | AU19890040740D | DE19896005513T | DE1989605513T | DK19890005280 | EP19890850040 | ES19890850040T | FI19890004818 | JP19890503025 | NO19890004314 | NZ19890227826 | SE19880000698 | SE19880000698D | US1990079283 | US19980217577 |
Declaration Date	2010-04-06
ISLD	ISLD-201005-004
Disclosure Number	6
Section	5

IPLYTICS PLATFORM

Databases format differences

➢ **PDF scan** of disclosure letters e.g. ISO, ATSC, ARIB

Databases format differences – **IPlytics integration**

➤ IPlytics uses **OCR technology** to parse **PDF** files and **integrate** and **index** all declared patent numbers

II. The Challenge of Matching Declared Patent Data

IPLYTICS
PLATFORM

How to match, normalize, categorize declared SEP data?

SEP declaration data is **messy** and often unstructured and subject to errors:

- Declared patent numbers may be **unpublished, include typos** are **wrongly parsed** from OCR and some numbers are **ambiguous** when the **kind code is missing.**

- Companies self-declare lists of patents in **various formats**:
  - HTML Websites
  - Excel/CSV spreadsheets
  - Word Docs
  - PDF scans

- Companies declare patent numbers in various formats as well as **various patent status** e.g.:
  - Unpublished priority/provision application
  - Published application
  - Granted patent number

IPLYTICS
PLATFORM

How to match, normalize, categorize declared SEP data?

➤ Patent number **format differences** need normalization:

Declared number	Type according to declaration	Match type	Number modification	Kind code	Matched application number
WO2006KR03250	application	application	*wo_year_cc_drop_zeroes*	False	WO2006KR3250A
KR20020063942	application	application	*cc_year_drop_zeroes*	False	KR200263942A
HK20010104144	application	application	*cc_year_drop_zeroes*	False	HK2001104144A
KR19980053228	application	application	*cc_year_drop_zeroes*	False	KR199853228A
KR19990054258	application	application	*cc_year_drop_zeroes*	False	KR199954258A
US20060420323	application	application	*cc_year_drop_zeroes*	False	US2006420323A
US201113303489	application	application	*cc_drop_year*	False	US13303489A
US20050218277	application	application	*cc_year_drop_zeroes*	False	US2005218277A

Monitoring SEP Matching Performance

Data Source	This week	Last week	Previous week	Year start	Target
ETSI Working Number Recall	96.52	96.51	96.51	88.14	>=95
Access Adv. Working Number Recall	90.9	90.9	90.9	56.37	>=90
ITUT Working Number Recall	93.94	93.07	93.07	60.81	>=90
MPEG LA Working Number Recall	95.62	95.62	95.62	70.17	>=90
SISVEL Working Number Recall	94.82	94.82	94.82	3	>=90
IEEE Working Number Recall	94.31	94.24	94.24	90.03	>=90
Via Licensing Working Number Recall	92.32	92.32	92.32	56.58	>=90
IEC Working Number Recall	97.09	97.09	97.09	96.11	>=90
ISO Working Number Recall	90.37	90.37	90.37	79.1	>=90
ATSC Working Number Recall	71.28	69.5	69.5	61.33	>=90
Wireless Pow. Working Number Recall	95.7	95.34	95.34	72.51	>=90
ISO/IEC Working Number Recall	89.61	89.51	89.51	80.57	>=90
ITUR Working Number Recall	17.25	17.25	17.25	15.72	>=90
SAE Working Number Recall	100	100	100	100	>=90
IETF Working Number Recall	94.03	94.03	94.03	47.1	>=90

iPLYTICS
PLATFORM

III. The Challenge of Cleaning Declared Patent Data

How to match, normalize, categorize declared SEP data?

False positive matches:

- **~30%** of all declared patents are ambiguous (one patent matches two patent families) which may introduce **false positive matches**

Ruling out false positive matches:

- Check if **declaring company** corresponds to **applicant, assignee** or **highest parent** of the matched patent.

- Check if **IPC/CPC** of matched patent corresponds to a given list of relevant **IPC/CPC.**

- Check if publication date corresponds **relevant time-span.**

→ Algorithms that identifies and filters out false positive patents

→ Manual double check to improve above algorithm

IPLYTICS PLATFORM

Monitoring SEP Filtering Performance

Metric	This week	Last week	Previous week	Year start
ETSI Multiple Applications per Working Number	0.17%	0.17%		0.17%
Access Advance Multiple Applications per Working	6.42%	6.42%		6.42%
ITUT Multiple Applications per Working Number	7.52%	7.52%		7.52%
MPEG LA Multiple Applications per Working Numb	NaN	NaN		MNaN
SISVEL Multiple Applications per Working Number	3.03%	3.06%		3.06%
IEEE Multiple Applications per Working Number	2.11%	2.26%		2.26%
Via Licensing Multiple Applications per Working Nu	NaN	NaN		NaN
IEC Multiple Applications per Working Number	0%	0%		0%
ISO Multiple Applications per Working Number	5.83%	5.88%		5.88%
ATSC Multiple Applications per Working Number	1.77%	1.84%		1.84%
Wireless Power Consortium Multiple Applications	1.34%	1.34%		1.34%
ISO/IEC Multiple Applications per Working Number	2.24%	2.24%		2.24%
ITUR Multiple Applications per Working Number	0%	0%		0%
SAE Multiple Applications per Working Number	0%	0%		0%
IETF Multiple Applications per Working Number	1.91%	1.98%		1.98%

IV. The Challenge of Expanding Declared Patent Data

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.

INPADC family

ETSI family

DOCDB family

■ ETSI basis patent (= disclosed patent)

▲ ETSI-definition family member of the ETSI basis patent

◇ No ETSI-definition family member of the ETSI basis patent

IPLYTICS PLATFORM
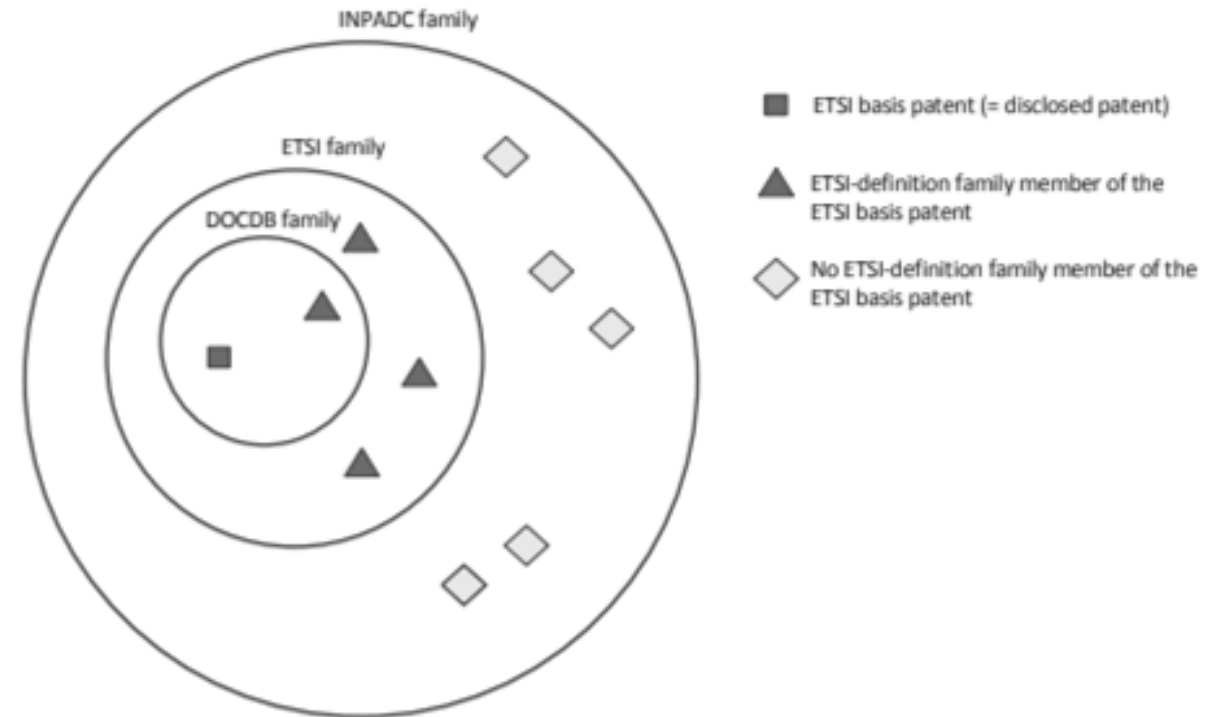
Data enhancement – missing family counterparts

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.

V. The Challenge of Ultimate Ownership Declared Patent Data

Corporate Tree Data

- There are variations of assignee names as well as subsidiary patent owners

	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	

IPLYTICS PLATFORM

Ultimate Owner Data

- For the correct evaluation of patent portfolios, it is crucial to know the ultimate owner of each patent family.

- An ultimate owner has no known majority shareholder and owns patent families that belong to its portfolio either directly or through its group companies, subsidiaries, and/or associate companies (each being majority-owned by the Ultimate Owner who holds at least 50% of shares).
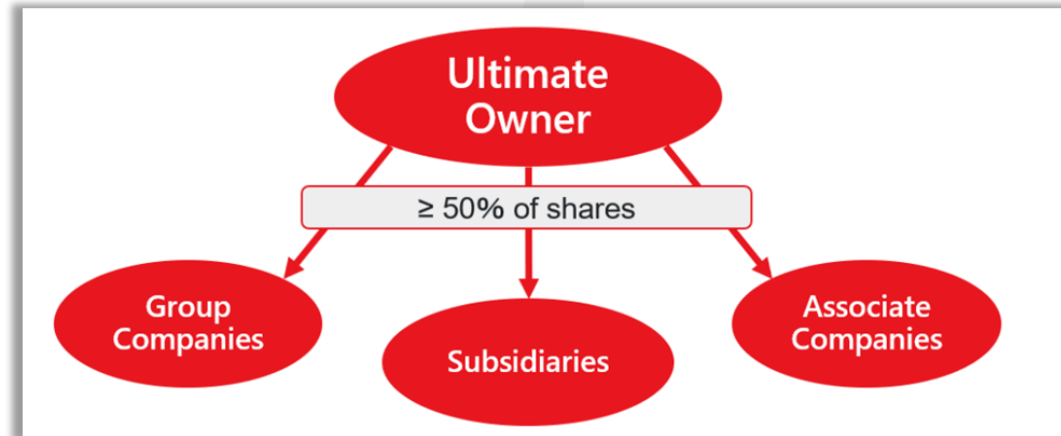
Latest assignee data

- The portfolio analysis aggregates patents as to the **ultimate owner** field by normalizing names and make use of corporate tree data
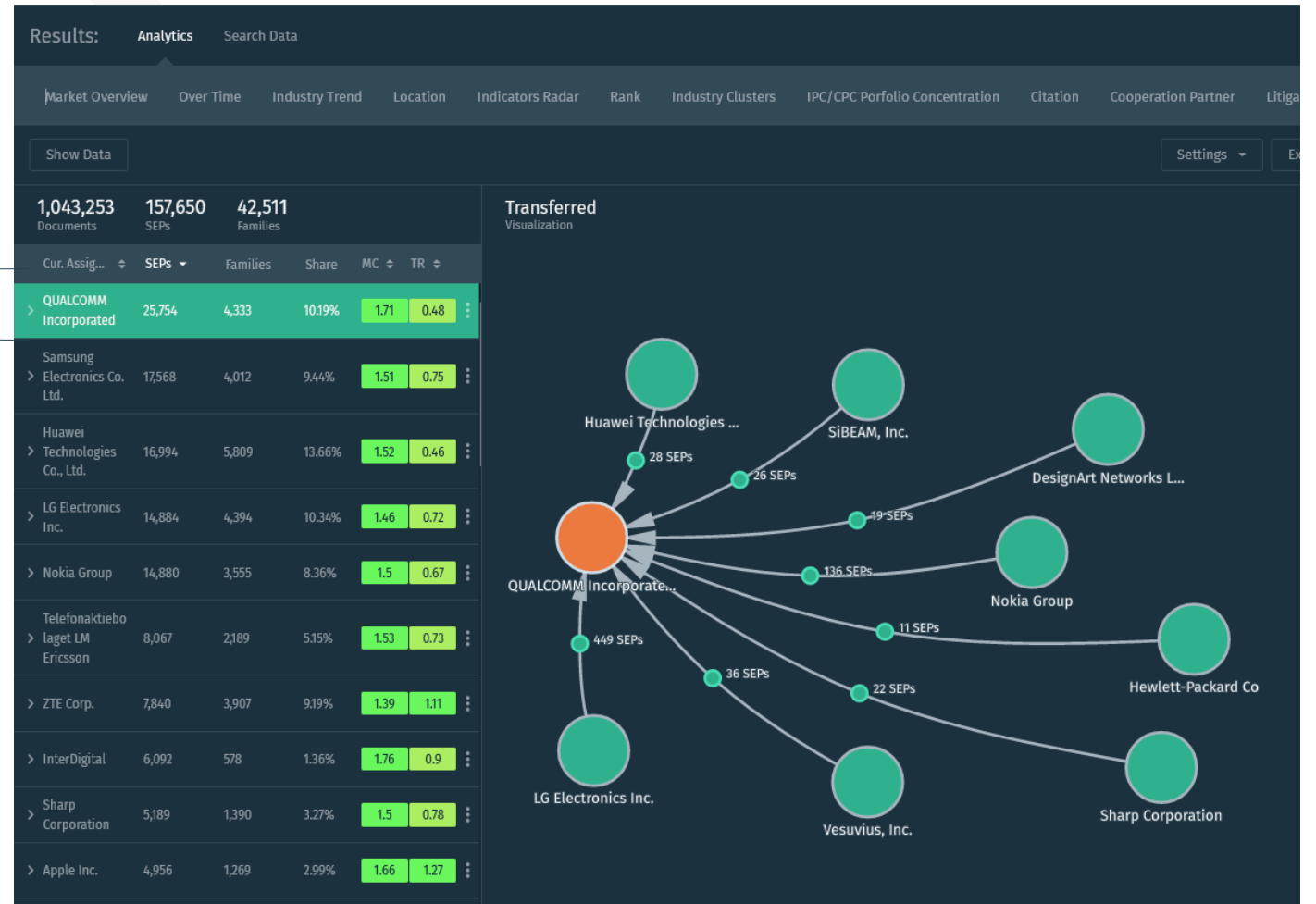
VI. The Challenge of Blanket Patent Declarations

Video Codec patent declaration data

Available video codec declaration data:

○ **IUT-T patent declaration** database include over **70%** so called "blanket" declarations → Companies state to own video codec SEPs without proving lists of declared patents.

○ **Patent pools** such as MPEG LA, Access Advance or Velos Media only cover a fraction of the video codec patent owners.

○ We identify almost **150 entities** that have submitted **standards contributions** for video codec technologies. Patent declaration information or patent pools are missing over for over **65% of these** companies.

Video Codec Transparency Situation

The **"minimal declaration"** situation due to blanket statements

> ➢ Approximately only about <u>20-30%</u> of all AVC /HEVC or VVC SEPs are declared at ITU-T

The numbers quoted above are examples of expert reports and may vary when considering other reports. No matter what the percentages are all reports show that patent declaration databases either include non-essential patents (e.g. ETSI and others) or are incomplete (e.g. IEEE, ITUT and others).

Wi-Fi patent declaration data

Available Wi-Fi declaration data:

○ **The Wi-Fi patent declaration** database (IEEE IPR) include over **50%** so called "blanket" declarations → Companies state to own Wi-Fi SEPs without proving lists of declared patents.

○ **Patent pools** such as SISVEL only cover a **fraction** of the Wi-Fi patent owners.

○ We identify almost **100 entities** that have submitted **standards contributions** for Wi-Fi technologies (IEEE Mentor). Patent declaration information or patent pools are missing over for over **60% of these** companies.

IP LYTICS PLATFORM

Wi-Fi Transparency Situation

The **"minimal declaration"** situation
- ➤ Approximately only about 10-20% of all Wi-Fi SEPs are declared at IEEE

The numbers quoted above are examples of expert reports and may vary when considering other reports. No matter what the percentages are all reports show that patent declaration databases either include non-essential patents (e.g. ETSI and others) or are incomplete (e.g. IEEE, ITUT and others).

IPLYTICS PLATFORM

VII. Wi-FI and Video Codec SEP Market Pain Points

Use cases for Wi-Fi and video codec **patent owners**

Patent portfolio manager:

➤ How to compare and value your portfolios against competitors for Wi-Fi or HEVC or VVC patents?

➤ What is my market share for Wi-Fi, HEVC or VVC patents compared to others?

➤ How can I identify strength and weaknesses to further develop my own portfolio?

Licensing executives / deal maker:

➤ How do I find all relevant Wi-Fi or HEVC or VVC patents in my portfolio?

➤ How do I identify patents to commercialize/license, sell or which ones should I abandon?

➤ How can I weed out 'weaker' patents, focusing resources on higher ranked patents

IP LYTICS PLATFORM

Use cases for Wi-Fi and video codec **licensees**

Licensing manager / legal division:

➤ How do I identify the market share of patents offered for licensing-in technologies like Wi-Fi or HEVC or VVC?

➤ How can I get access to objective data to consider for FRAND preparation, negotiations, argument formulation

➤ How do I know the offered SEP portfolio is "essential"?

**Strategic IP attorneys / legal divisions:**

➤ Which SEPs are in fact relevant for my products?

➤ Who are the leading patent owners for Wi-Fi or HEVC or VVC patents and how many patents do the patent pools (Access Advance / MPEGLA or Velos Media / Sisvel) cover?

➤ What are the risk to be litigated in that market?

IP LYTICS
PLATFORM

VIII. The Wi-Fi and Video Codec SEP Identification Approach

The IPlytics data team has been utilizing different inputs including a smart combination of **IPC/CPC**, **time ranges**, tested against **contribution** and **inventor** data from video codec patent declarations, patent pool programs, and standards contributions.

CPC/IPC concentration

➢ We make use of **pooled patents** and **declared** patents' **main IPC/CPC** classes
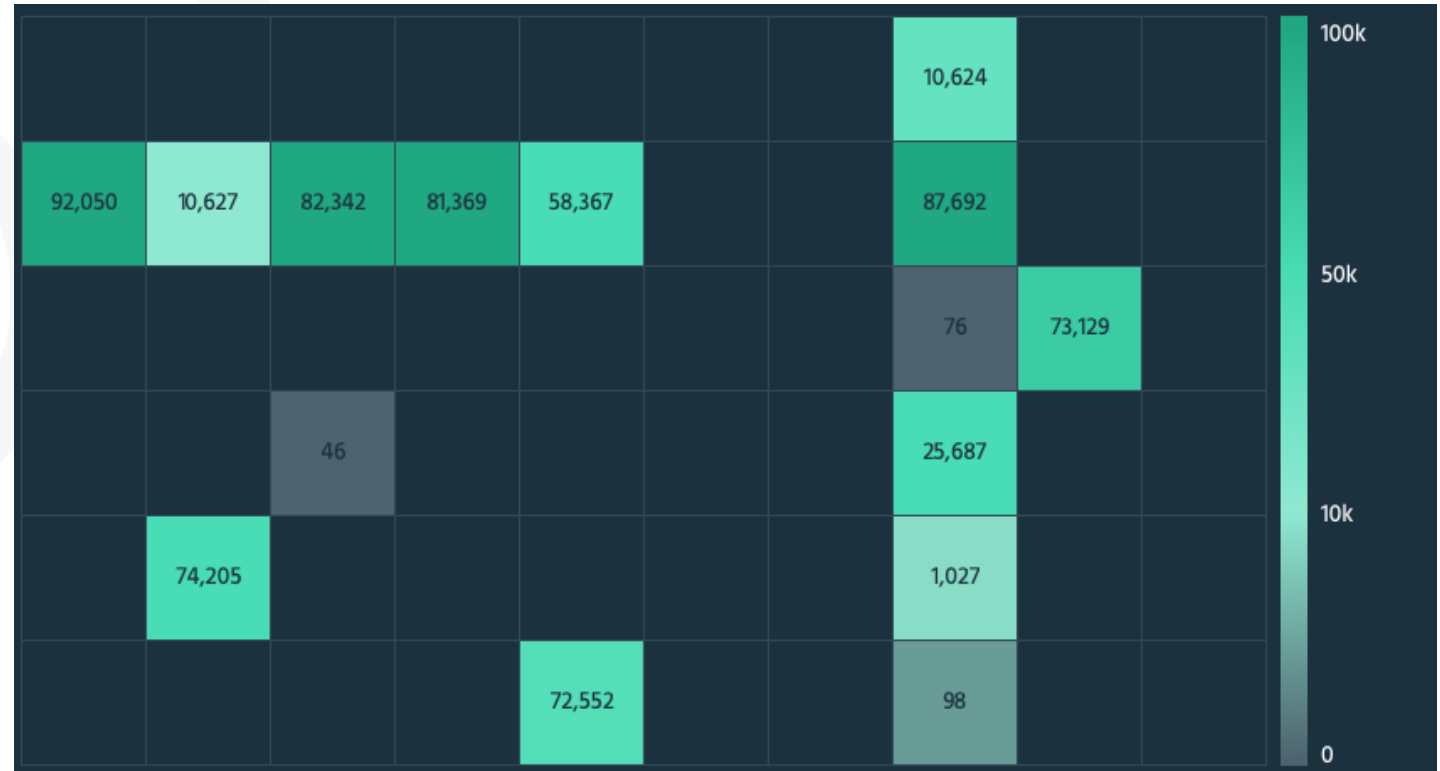
CPC/IPC concentration

➢ We utilize the **time periods** during which the video codec **standard generations** were developed

Patent application

18 months until public →

On average 32 months until granted →

*Often submitted and **published** a few months (0-2) after the provisional application*

Standard contribution

→ →

*Often approved an **accepted** with a few weeks after the meeting*

IPLYTICS PLATFORM

Contributor Applicant Correlation

➢ We correlate patents' first applicants and inventors with standards contributor entities and authors

- Submitted **approved and incorporated VVC (H.266)** contribution at meeting
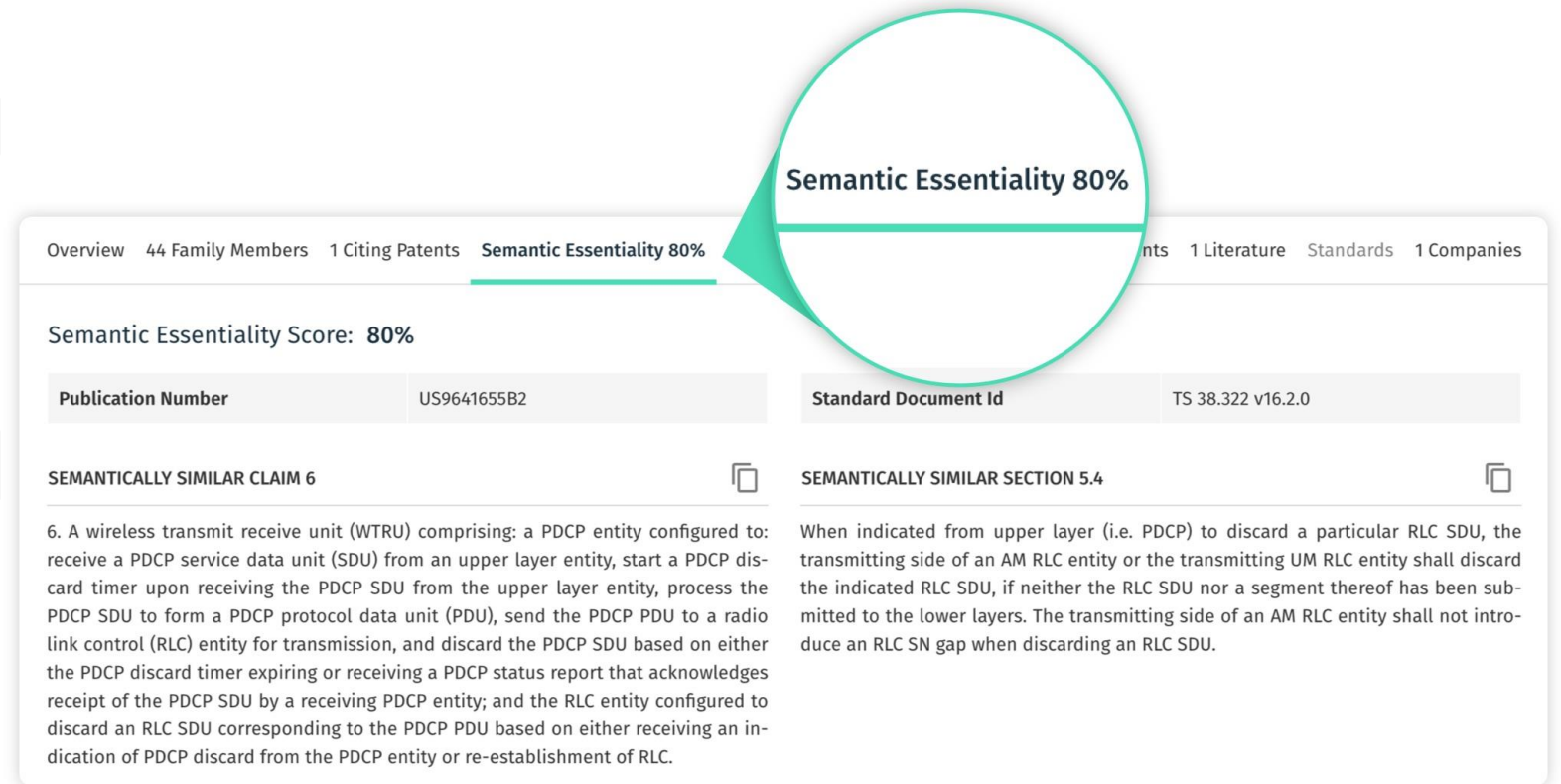
- Patent filed by same applicant or inventor
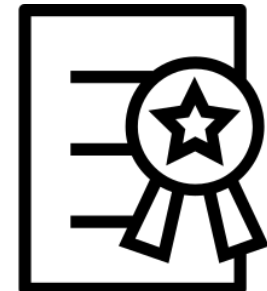
Semantic analysis of patent claims and standards

➤ We **semantically** map patent **claims** to video codec standard **sections**

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

Semantic Essentiality 80%

Semantic Essentiality Score: **80%**

Publication Number	US9641655B2

Standard Document Id	TS 38.322 v16.2.0

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.

IPLYTICS
PLATFORM

➢ IPlytics **Undeclared Patent Universe** provides a **Wi-Fi** and **video coding landscape** of potentially essential patents.

IPLYTICS
PLATFORM

➢ It allows to **discover patents** that may be essential, even though they're hidden behind blanket declarations.

➢ It enables to gain a clear view of the **competition** in the video coding sector.
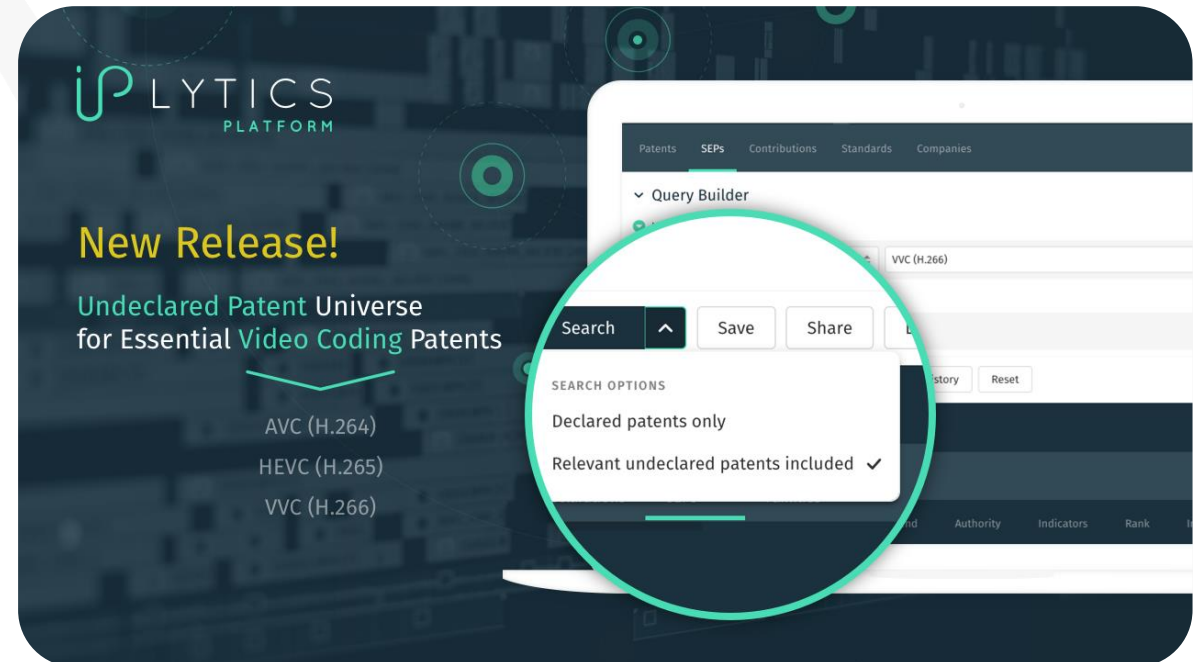
➢ It empowers users to easily recognize the **proportion of the landscape** of players in the video coding space.

➢ It enables users to adjust the **portfolio strategy** for video coding based on more accessible data.

https://platform.**iplytics**.com/search?docType=declarations&aggregationLevel=family

110%   Suchen

IPLYTICS PLATFORM

Home   Search   Dashboard

sep_demo@iplytics.c

Patents   SEPs   Standards   Companies
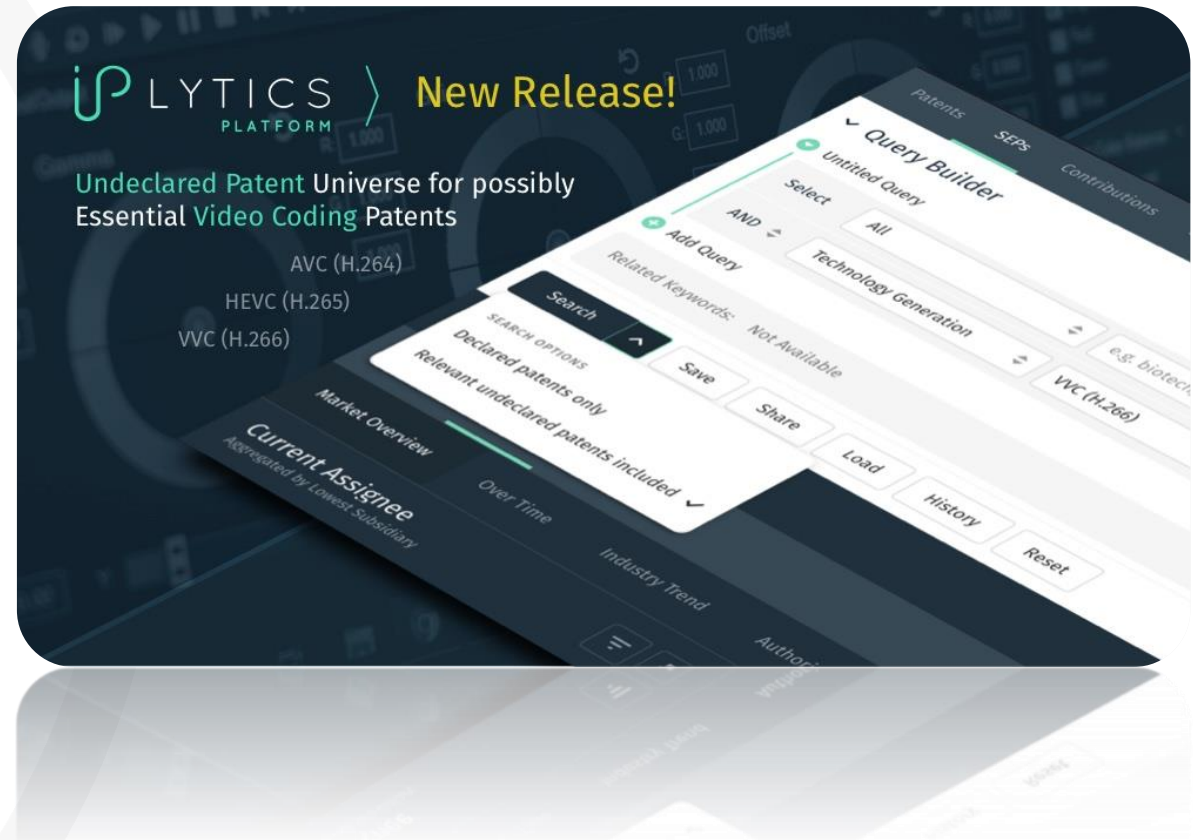
Query Builder

Untitled Query   Edit   Code Preview   Qui

| 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   Exp

Results: Analytics   Search Data

Results: Analytics

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

Need Help?

The Wi-Fi and Video Codec Undeclared SEP Data Limitation

Limitations

○ The IPlytics undeclared patents identification follows a **precision/recall approach**.

○ Patent characteristics like IPC/CPC, priority dates, inventors or patent applicants are utilized to identify potentially essential video codec patents.

○ Our approach identifies 96% of all declared or pooled patents with a data noise rate of 2% (known false positives).

○ **Not all identified undeclared Wi-Fi and video patents are essential!**

○ The Semantic Essentiality Score (SES) provides accurate results only for English original language patents (e.g. US, EP, CA, GB and so on)

IPLYTICS
PLATFORM

VII. Takeaways

Why information is key!

Patent Declaration Data is incomplete and ambiguous:

➢ Most reports that provide rankings of declared patents rely on raw data that does not consider:

1. rigorous data matching and cleaning

2. false positive determination and cleaning

3. consideration of worldwide ownership changes as well as corporate trees, M&As and beneficiary shares.

4. accurate patent family expansion

5. undeclared patent identification

SEP licensors (patent owners)

SEP licensors use of IPlytics Platform:

➤ Align R&D investments, standards development, patent prosecution, patent portfolio management and licensing/monetarization 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.

IPLYTICS
PLATFORM

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 module supplier

➤ Monitor SEP filing, SEP change of ownership and litigation to **quantify risks and plan royalty payments**.

➤ **Identify** industry related (e.g. M2M, IoT, IIoT) **standards development initiatives** to have a seat at the table when future connectivity technology is developed.

IPlytics Europe and US

For more information on IPlytics Products and Services, please contact us on:

https://www.iplytics.com/request-a-demo/
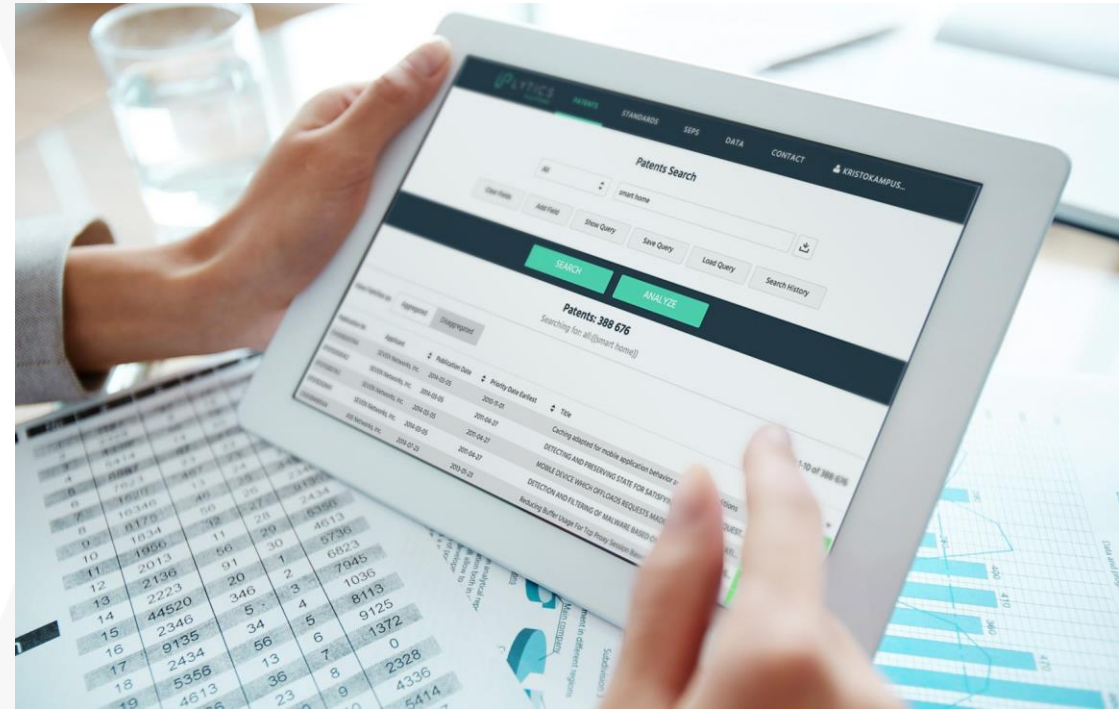
The SEP Couch

with Tim Pohlmann

IPLYTICS

PLATFORM

Register for Part 2: How to deal with SEP determination

LexisNexis®   IPlytics™   TIM POHLMANN

Part 2: Closing the SEP Transparency Gap

How to Deal with SEP Determination of
Large SEP Portfolios

Europe/US: Tuesday, 22nd August 4 PM CEST, 10 AM ET
Asia: Wednesday, 23rd August 8 AM CEST

IPLYTICS PLATFORM

Contact

Questions?

IPlytics GmbH

info@iplytics.com

www.iplytics.com

IPLYTICS
PLATFORM