IPLYTICS PLATFORM

HOW TO ANALYZE & SEARCH ON IPLYTICS PLATFORM

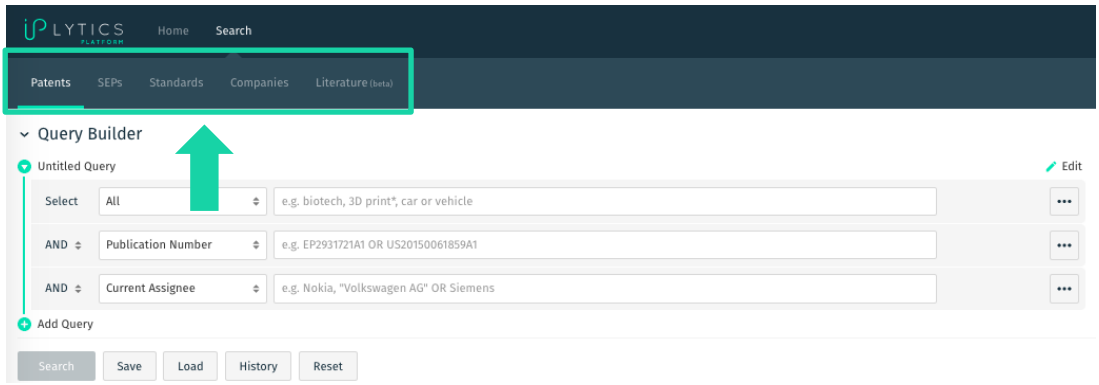
IPlytics GmbH | Schopenhauer Str. 93e | 14129 Berlin, Germany | info@iplytics.com | www.iplytics.com

IPlytics Analysis and Search Queries

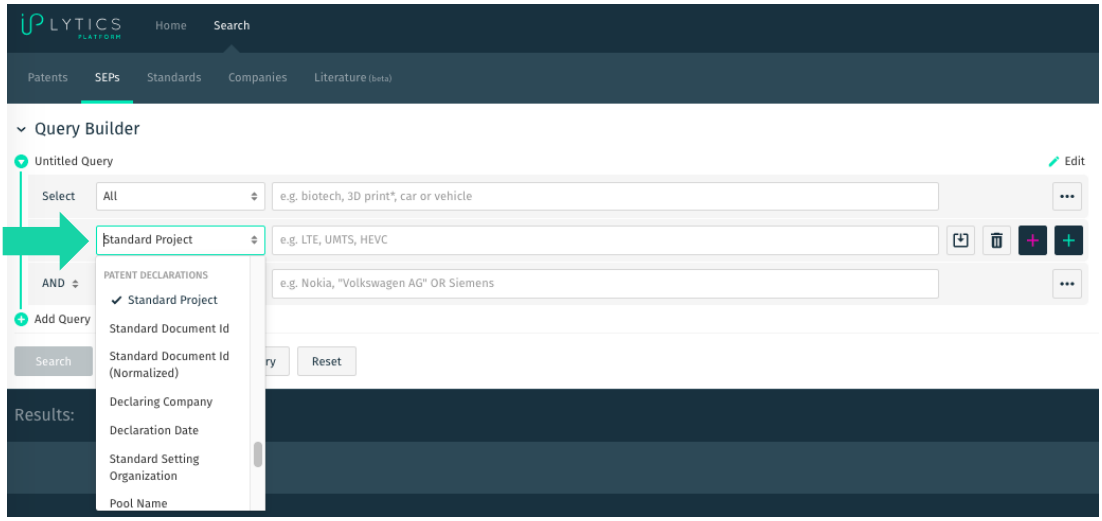
This brochure is a guide for using IPlytics Platform and provides examples on how to analyze and search patents, declared SEPs, patent pools, standards documents and standards contributions.

How to access the IPlytics patent, declared SEPs and standard database

IPlytics Platform allows searching and analyzing patents, declared SEPs, standards contribution and standards document data (find overview of available data sources in Appendix 1). By selecting the databases on the top menu bar, you can dive into the search query builder of each data source.



The patent database and the SEP database contain similar search fields, while the SEP database integrates additional standards related fields such as the Standard Project, Standard Document Id, Declaring Company, Declaration Date, Standard Setting Organization, Patent Pool and many more (see drop down in screenshot).

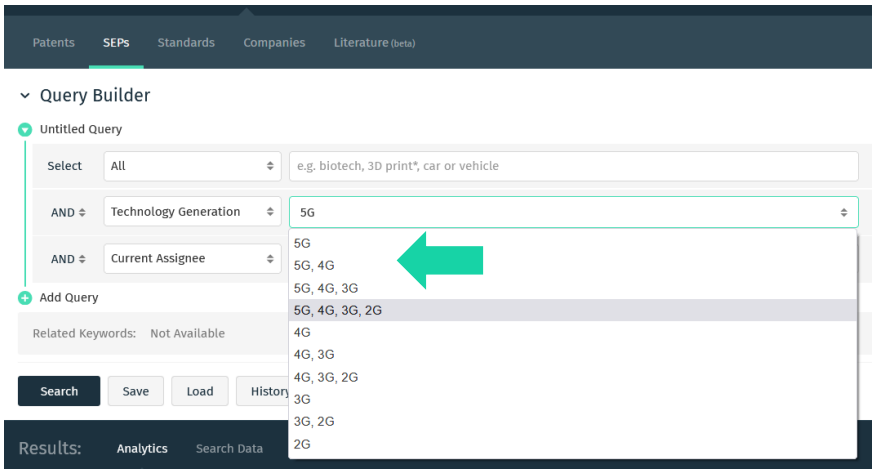


The SEP database allows you to search for patents declared to 4G, 5G, or any other standard project like Wi-fi, video coding HEVC, VVC or the Qi standard (find list of all standards projects in Appendix 2). The SEP specific fields can be described as follows:

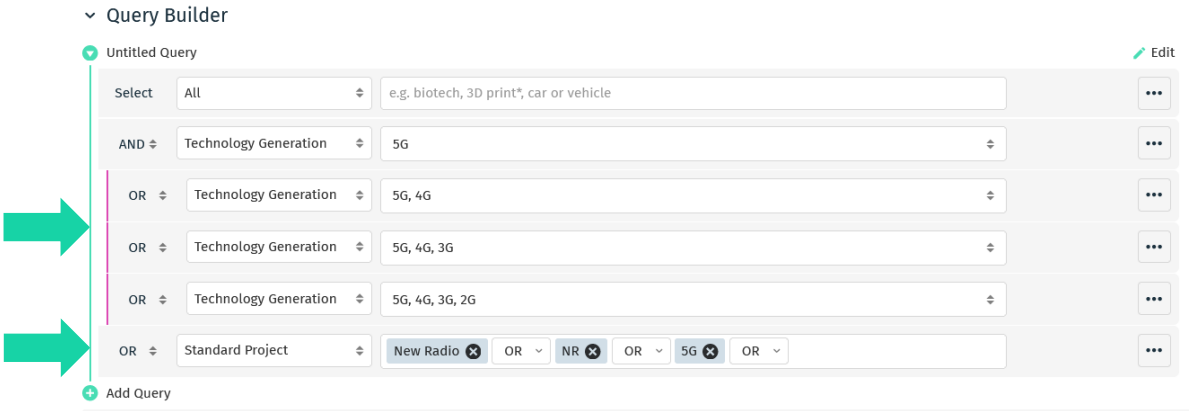
- **Standard setting organization** – identifies to which standard setting organization the patent has been declared.
- **Standard document ID** – identifies the official standard document number including the version (e.g., *TS 38.331 v16.4.1, 802.11ac, ISO/IEC 14496-2*).
- **Standard document ID harmonized** – identifies the main standard id without the versions (e.g., *TS 38.331*).
- **Standard project –** identifies a certain standard project. A standard project is a more general term of a standard submitted by the declaring company. Therefore, various standard documents can define an overall standard project like Wi-fi, 5G or HEVC. If you are searching for ETSI declarations it defines the standard project mentioned in the submitted declaration (e.g., *5G NR, see* Appendix 2). If you are searching outside ETSI it defines the general standard project (e.g., *QI Standard*) or a patent pool (e.g., *Pool Program: HEVC (H.265)*).
- **Technology generation** – defines the technology generation of the ETSI standard document classified by 3GPP.
- **Pool name** – defines the name of a patent pool a patent has been submitted to (e.g., *MPEG LA*).

How to search patents declared to the 5G or 4G standard?

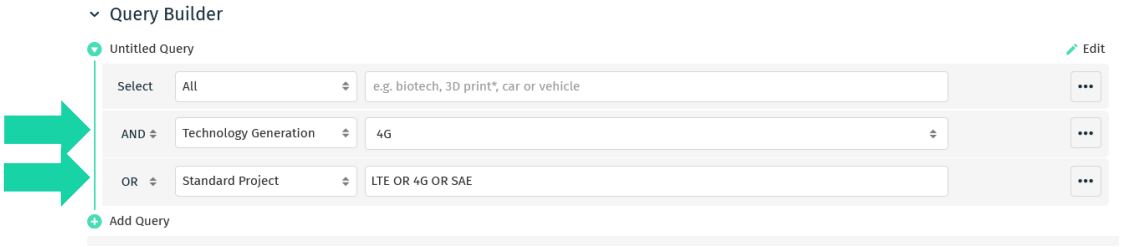
The IPlytics technology generation field is based on the declared TS number and its associated generation classification provided by 3GPP where each TS number can be classified into 10 different technology generations including **standalone generations** as 5G or 4G or 3G or 2G but also including **bridge technology generations** such as - 5G,4G - or - 4G,3G,2G -. The **bridge technology generations** (comma separated as 5G,4G) represent their own technology generation grouping and do not represent a combination all -5G- and -4G- declared patents. The screenshot shows possible technology generation in the drop down.



If you search for patents declared to 5G the technology generation field allows the identification - when selecting 5G (first in drop down) - of all patents declared to 5G relevant TS (e.g. TS 38.111, TS 38.213, TS 23.501 and others). You can add to this the 5G bridge technologies (second, third, fourth position in the drop down) - when selecting 5G, 4G and other combinations – for all patents declared to "5G, 4G" relevant TS (e.g. TS 26.251, TS 26.258, TS 26.253 and others). Finally, you can identify all patents declared to 5G relevant project names (see Appendix 2) in cases where the patent was not declared to a TS but only to a project (e.g., "New Radio"; "5G", "NR"). Therefore, the 5G search includes all patents declared to technical specifications which are classified as 5G as well as 5G bridging technologies and it includes all patents that are declared to a 5G relevant standard project "New Radio, 5G, NR". The query uses the OR operator to connect all fields (see screenshot below):

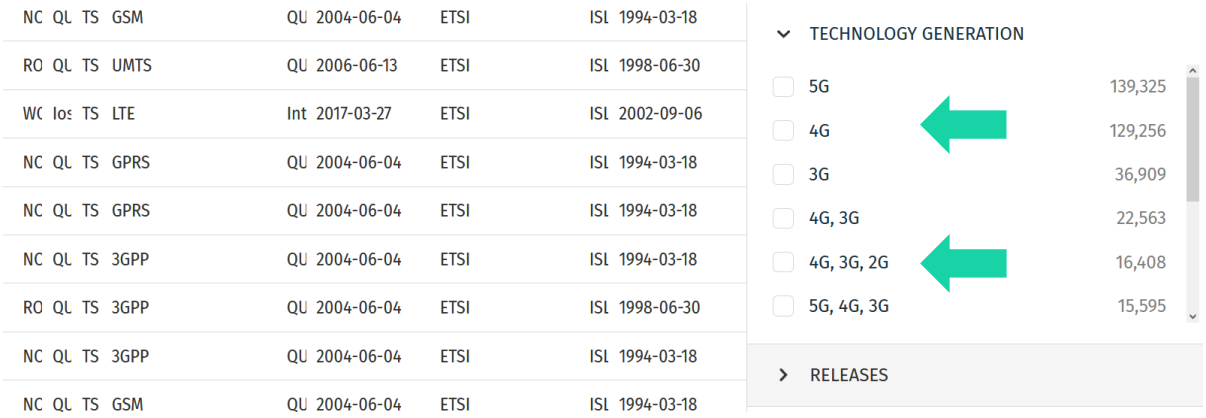


If you search for 4G declared patents and you do not want to consider 4G bridge technologies but only the pure 4G TS as well as the 4G standard project, the following query has to be initiated (see screenshot below):



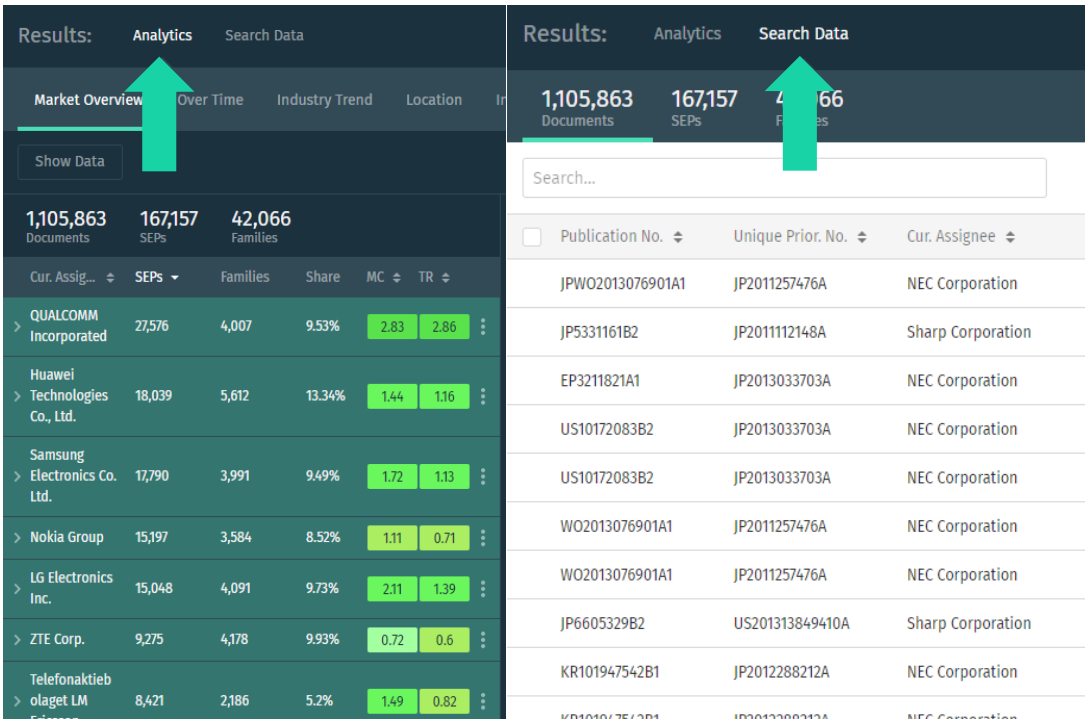
This search includes all patents declared to technical specifications which are classified as 4G only (no bridge technologies) by the technology generation search field, and it includes all patents that are declared to the more broader standard project “LTE, 4G, SAE”.

Typically, the **bridge technology generations** are subject to smaller numbers of declared patents as the below screenshot shows all declared ETSI declarations by technology generation where multiple generations per patent are possible:



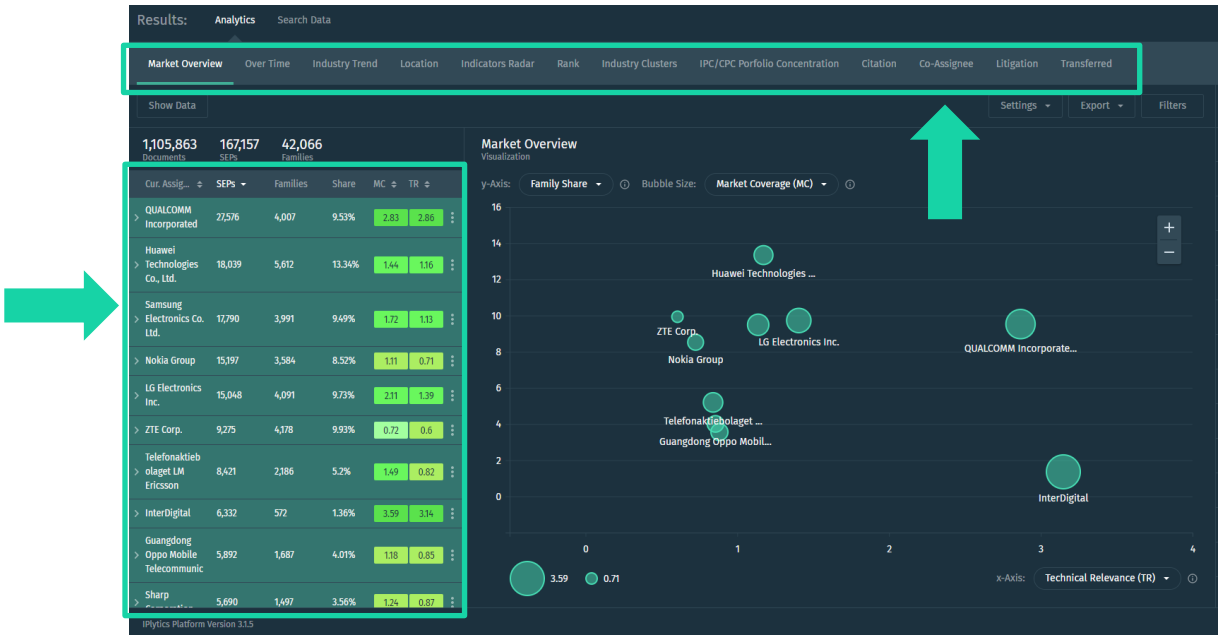
Switching between Analytics and Search Data

When searching for patents, declared SEPs or standards contributions, you can access two result sets selectable in the tabs: **1. Analytics** and **2. Search Data.**



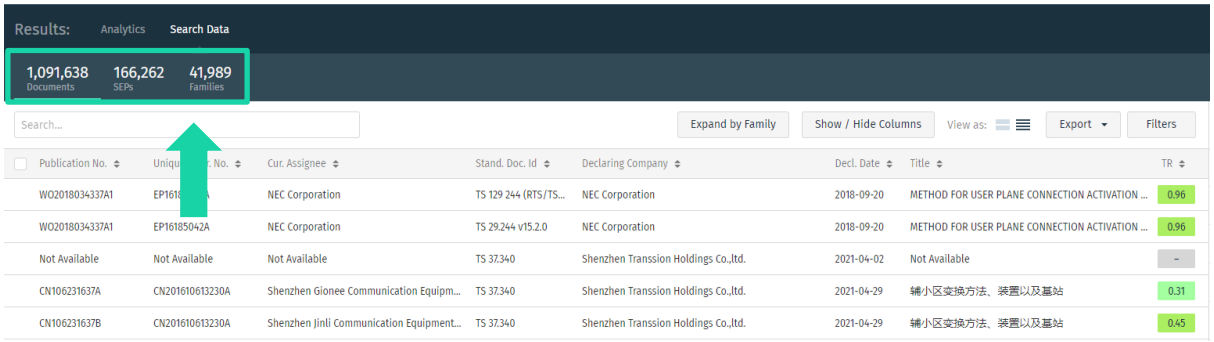
1. Analytics

The **Analytics** tab (default) provides you with a graphical result that allows for the visualization of patents, declared SEPs, or standard contribution data. The table on the left side lists all companies and their portfolios. For example, searching for technology generation 5G in the SEP database will list and rank the largest patent portfolio owners of 5G declared patents. By default, the top 10 companies are selected for the Market Overview (default graph). It is possible to select or deselect any organization in the list of organizations on the left-hand side for possible inclusion into the visualization itself (see screenshot). You can also select several different **Analytics** visuals in the top menu above the graph to navigate to: Over Time, Industry Trend, Location, Indicators Radar, IPC/CPC Concentration, Rank, Industry Cluster, Co-Assignee, Litigation or Transferred graph (see screenshot).



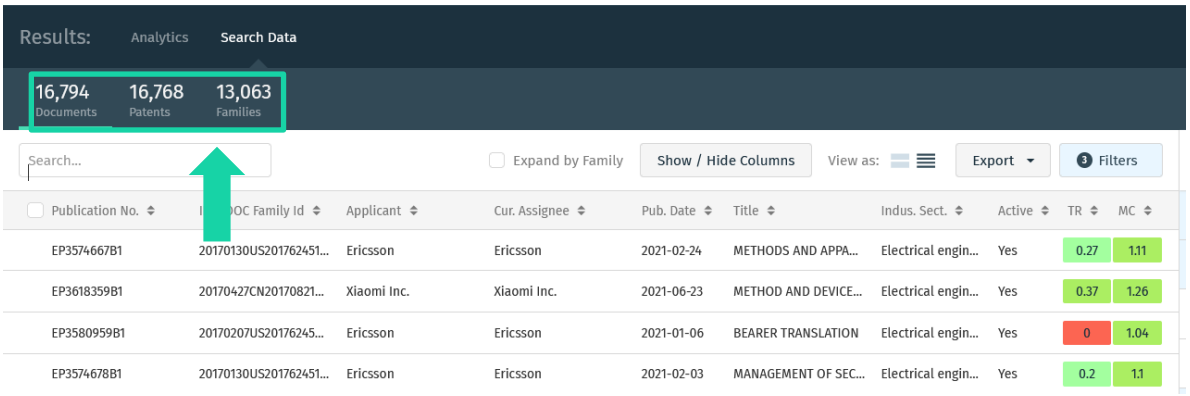
2. Search data

In the **Search Data** tab, you can dive into the patent-by-patent lists. In the SEP database, **Search Data** provides three different result aggregations tabs called **Documents**, **SEPs** and **Families**.



- **Documents** tab provides the lowest level of granularity and lists any unique patent and standard combination. Remember most patents are declared to multiple standard documents and the Documents tab may list the same patent multiple times but declared to different standard documents.
- **SEPs** tab provides the application reduced result set (by application serial number) and aggregates all declared standard documents to the unique patent to which it has been declared.
- **Families** provides an INPADOC extended family reduced result set (by the INPADOC family) and aggregates all declared standard documents to the unique patent family it has been declared to with one patent shown as the family representative.

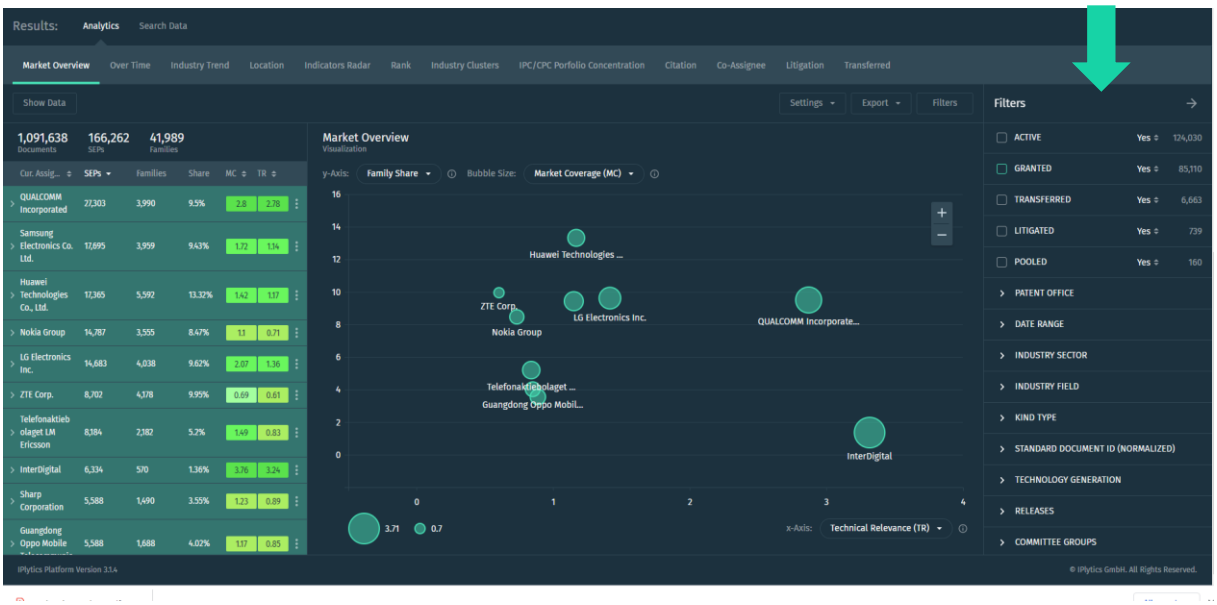
When in the Patent database, **Search Data** provides three different result aggregation tabs called **Documents**, **Patents** and **Families**.



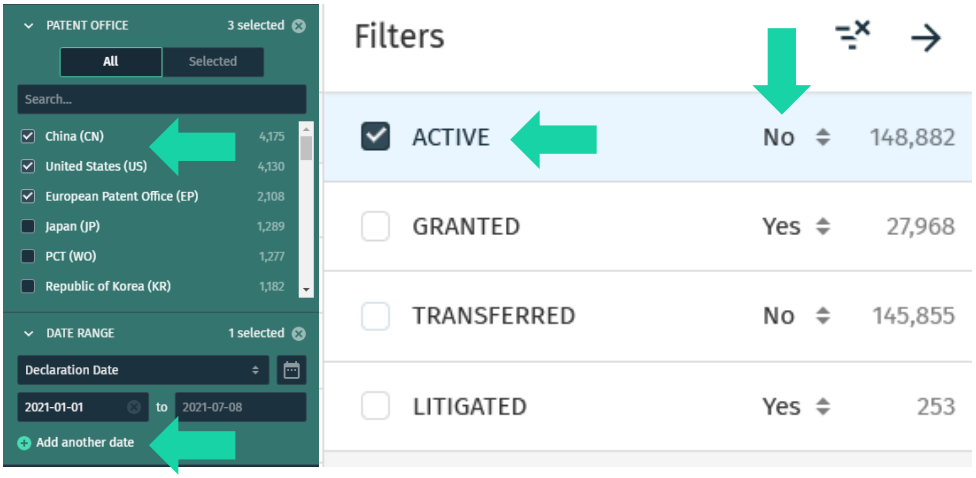
- **Documents** tab provides the lowest level of granularity and lists any unique patent document version such as different application or grant document versions.
- **Patents** tab provides the application reduced result set (by the application serial number) with the latest patent document shown as the patent representative.
- **Families** provides an INPADOC extended family reduced result set (by the INPADOC family) with the latest shown as the family representative.

Refining Results with the Filter Bar

IPlytics Platform provides a Filter Bar to further refine the results after executing an initial search. If you want to apply a filter, you must click the check box. The search filter will then be applied automatically after a 2 second delay. With filters you can quickly refine the results. E.g., you can filter active and granted patents, transferred patents, litigated patents or pooled patents, you can filter by patent office or define certain publication date time range (see screenshot with filter bar options on the right below).



For some filters it is possible to combine different filter options e.g., to select multiple patent offices or combinations of publication / application / declaration / expiration dates. To add another date, you can click on “Add another date” below the date filter section (see below screenshot on the left). If you want to look at patents that are not active i.e., lapsed or expired you must switch the active filter setting to -**No**- and then click the check box to refine the results to patents where active = No (see below screenshot on the right).

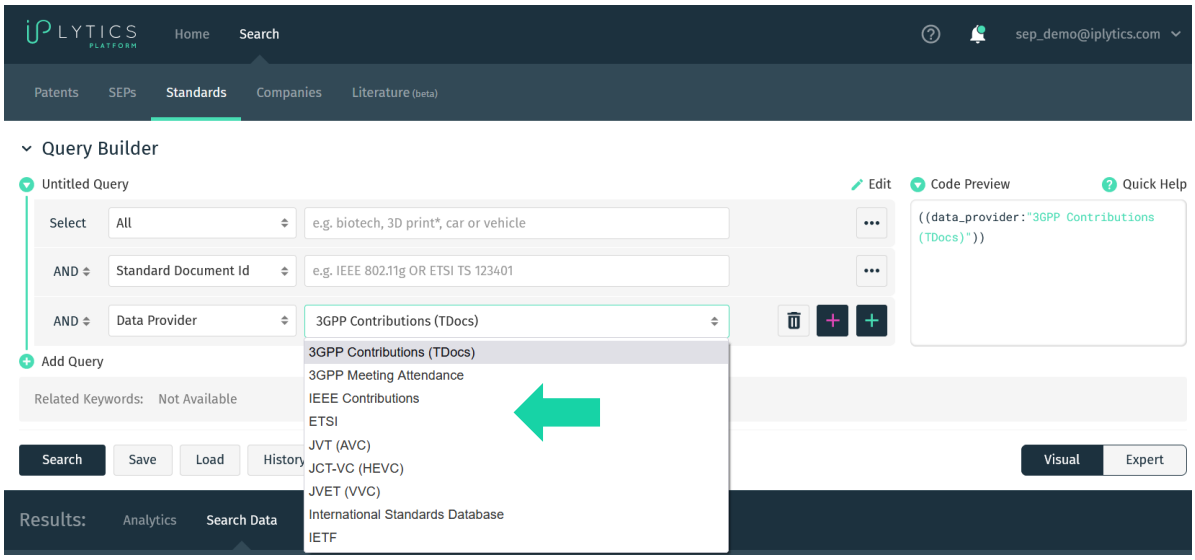


In total you can refine the following filters:

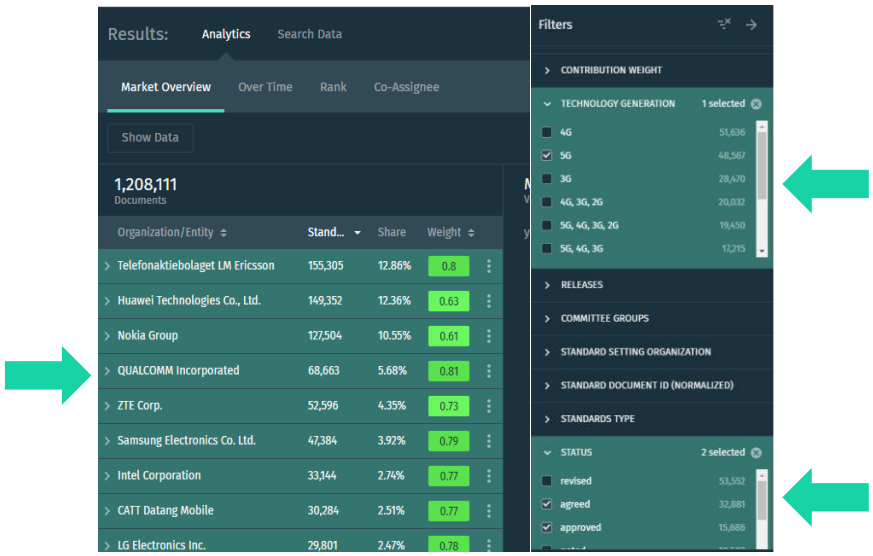
- **Active** – identifies patents that are not lapsed, revoked, withdrawn, or expired based on an estimation of the latest legal status event provided by the patent office.
- **Granted** – identifies all granted patent documents provided by the patent office.
- **Transferred** – identifies patents that have been transferred based on the change of ownership given by the legal status field. We only consider patents as transferred where the first assignee and current assignee are two different legally independent companies.
- **Litigated** – identifies patents referenced in worldwide patent litigation cases. The litigation data is provided by Darts-IP.
- **Pooled** – identifies patents listed in a patent pool program.
- **Patent Office** – identifies patents by the patent office of filing.
- **Data Range** – defines time ranges for publication date, application date, declaration date, priority date earliest and expiration date.
- **Industry Sector** – defines 6 industry sectors a patent can be classified to by combinations of IPC/CPC classes.
- **Industry Field** – defines 35 industry fields a patent can be classified to by combinations of IPC/CPC classes.
- **Kind Type** – identifies the kind type of a patent document provided by the patent office.
- **Standard Doc ID (normalized)** – identifies the version reduced standard document number.
- **Technology Generation** – identifies the technology generation by the standard documents classified for each technology generation.
- **Release** – defines a set of technical specifications from ETSI that were published in a specific standard release.
- **Committee Groups –** defines the specific working group in 3GPP that created the technical specifications.

Searching Standards and Standard Contributions

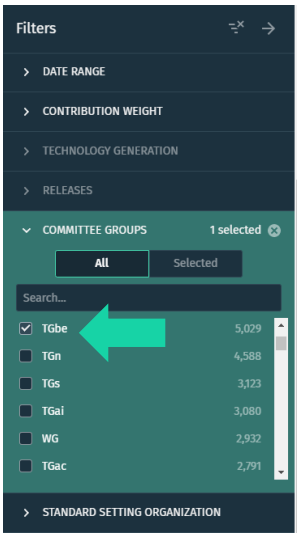
The standard documents and standard contributions database can be accessed under the top menu bar **Standards** tab. The most used search in the **Standards** tab is to search for 4G, 5G, IEEE or video coding standard contributions (HEVC/VVC). The search field - **Data Provider** - allows the selection of different standard contribution data sources as well as standard document sources or attendance sources (see drop down in the screenshot). The 3GPP contribution selection will result in a search for all contributions submitted to 3GPP.



While the table on the left side lists the largest standard contributors (left screenshot below), the filter bar at the right side allows the result to be refined by 5G or 4G **Technology Generations** or to filter only approved and accepted contributions via the - **Status** - filter (right screenshot below).



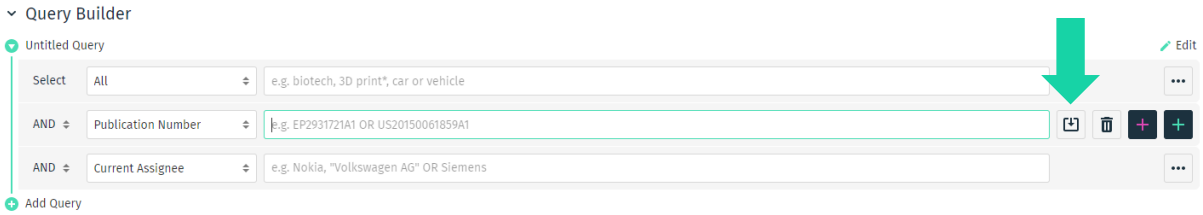
The filter bar in the **Standards** database further allows to refine standard contributions by different working groups. If you select the data provider = “IEEE Contributions” the COMMITTEE GROUPS filter identifies Wi-fi 6 (**TGax**) or Wi-fi 7 (**TGbe**) or other Wi-Fi technology versions (see screenshot below).



Import function

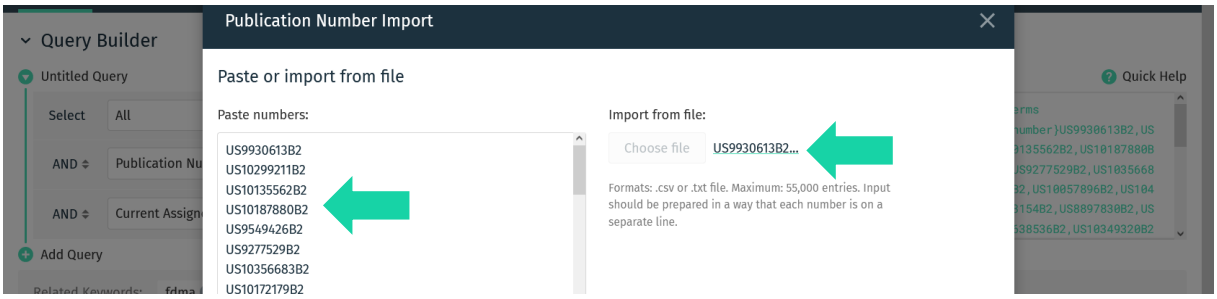
Each search field provides the possibility to import individual lists of numbers or names. The most common import is the upload of a given list of patent numbers. If you select the field “Publication Number” and click right next to the search field the import symbol will appear (see screenshot below). The import allows you to “copy paste” a column of given patent numbers or upload a CSV or text file of publication numbers in a column. Selecting different fields allows you to import different numbers e.g. “Publication Number”, “Application Number”, “Unique Priority Number” or “INPADOC family Id”. Make sure to only import patent numbers without any special characters like ,/.&-. The publication number import function considers different formats of patent numbers and automatically corrects them.

<u>Accessing the import feature:</u>



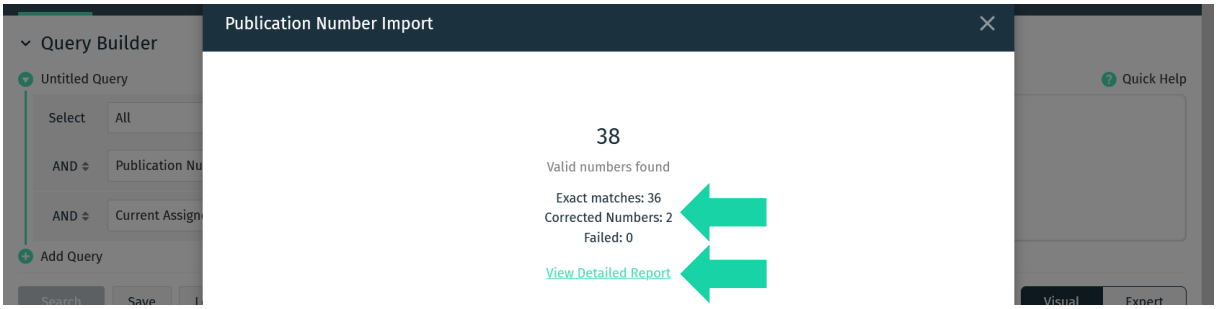
The import opens a window to copy paste numbers (screenshot left box) or upload numbers (screenshot right “Chose File”).

Import interface:



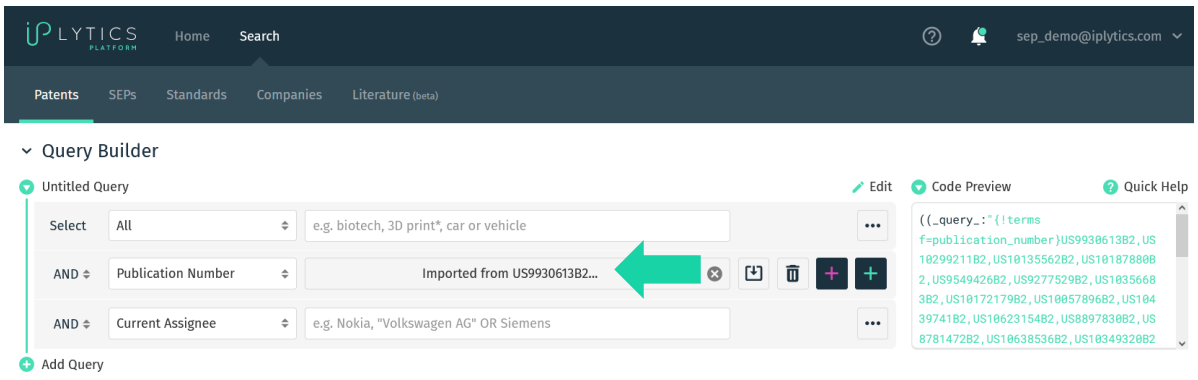
The Publication Number Import report shows if the system was able to match all imported numbers (“Exact Matches”) or if some numbers were corrected (“Corrected Numbers”) or failed to match (“Failed”) see screenshot below.

Import matching report:



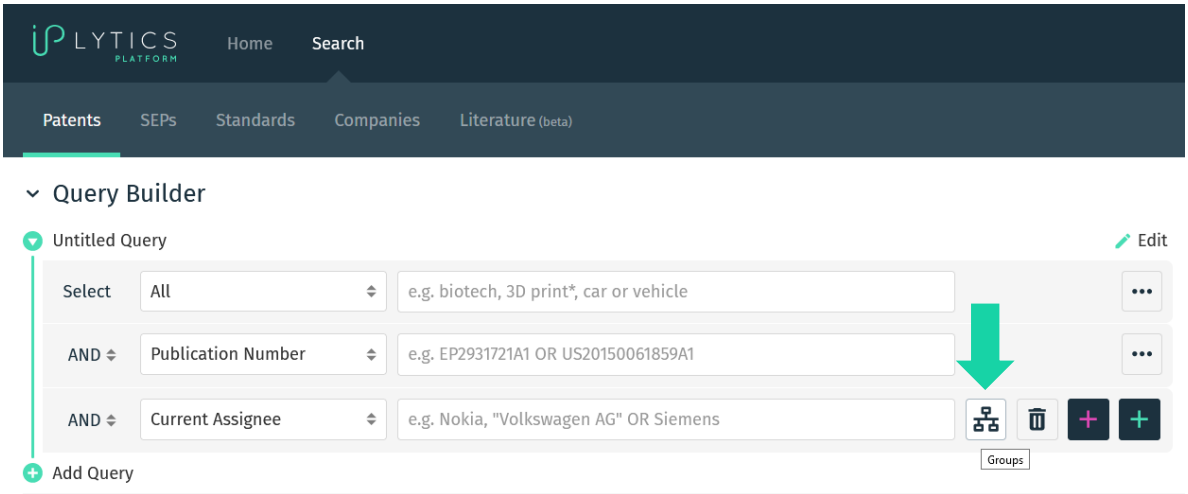
Click on “View Detailed Report to see the numbers that matched, were corrected or even failed to be imported. Once you click import both the exact matches and corrected numbers are imported in the search query builder (see screenshot below).

Imported numbers in search query:

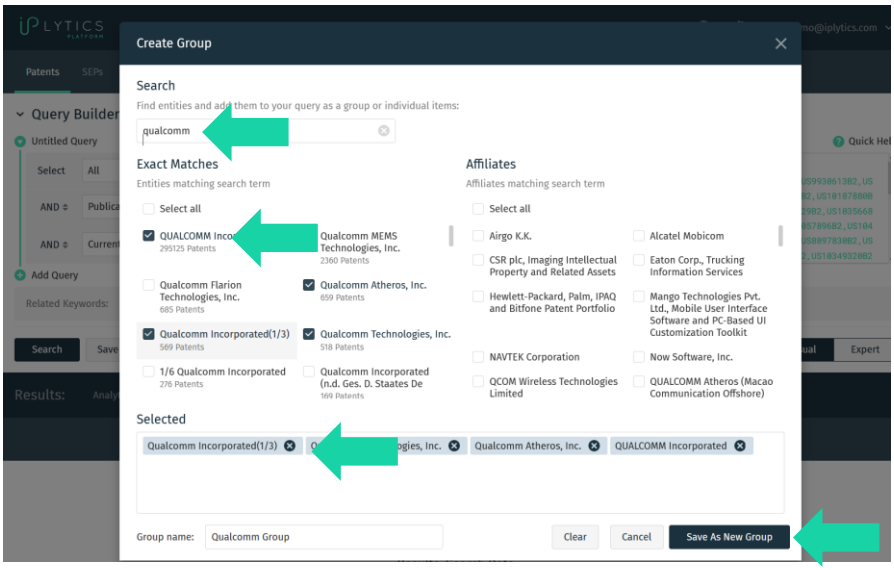


Applicant/Assignee grouping function

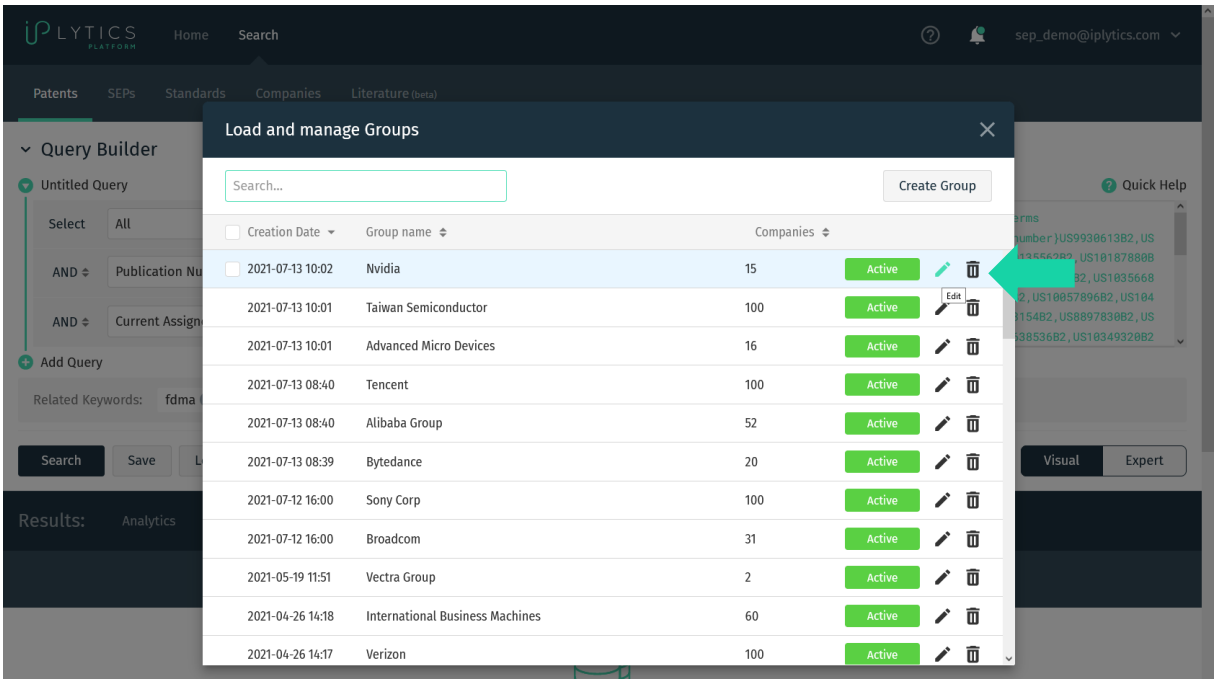
IPlytics Platform allows applicants, current assignees or declaring company names and subsidiaries to be grouped together to an ultimate parent group or other type of custom company grouping for the ease of visualizing the results. The grouping symbol will appear once you select any of the applicant or assignee search fields (see screenshot below).



Within the create group section you can use the search field to search applicants/assignees which you would like to group. You can click the result list of applicants to add them to your group. You can label the group and then click “Add to query”. From now on all applicants / assignees will be grouped under the label name (see screenshot below)

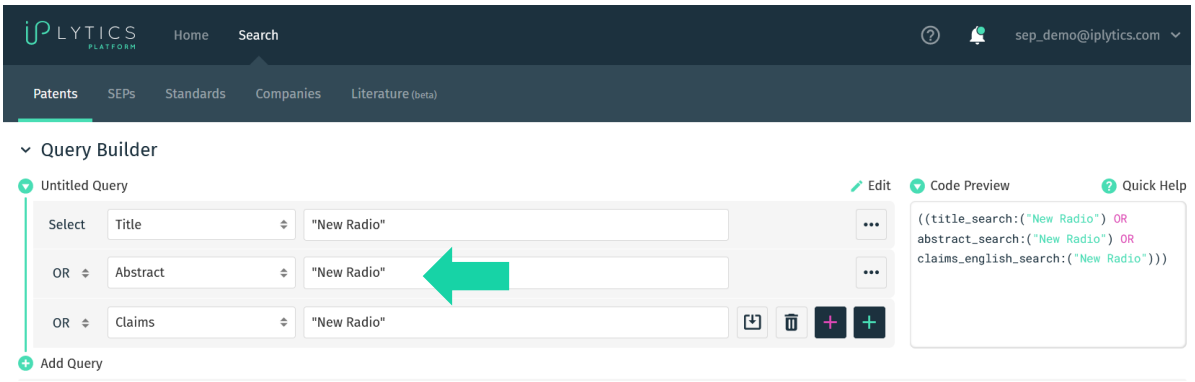


You can load and manage groups in case you would like to activate/deactivate, edit or delete groups.



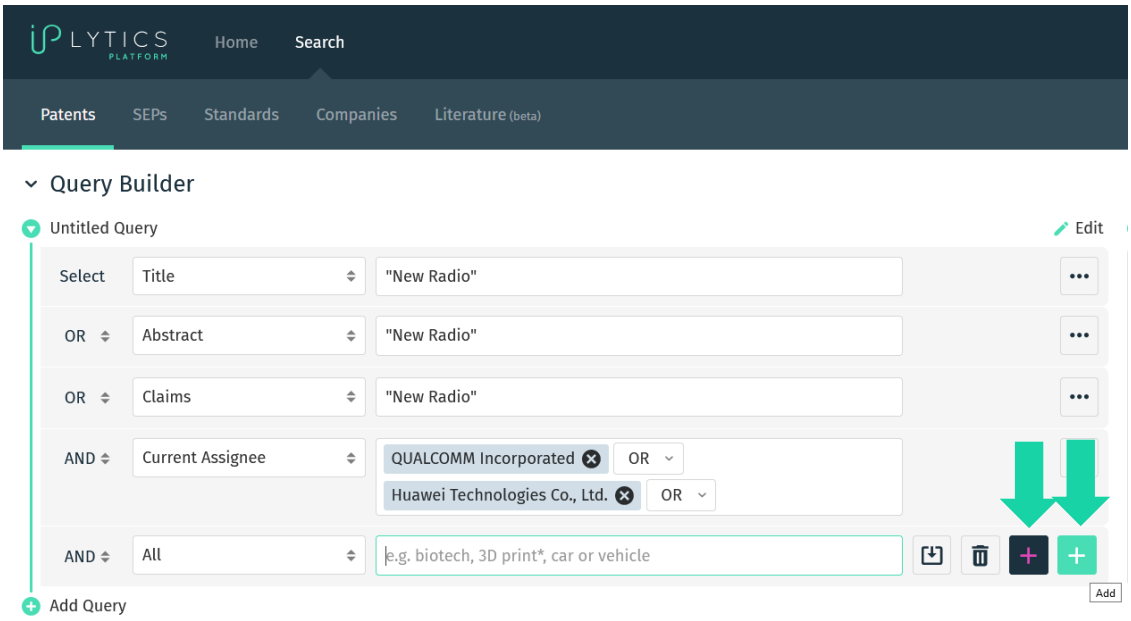
Search Fields

In general, in all database the IPlytics Platform provides different search fields. By default, the search field is set to ALL, referring to a search for the query term within all text fields and meta fields. The search field can be easily switched by the user to process the search within other fields for instance the title, abstract or claims.



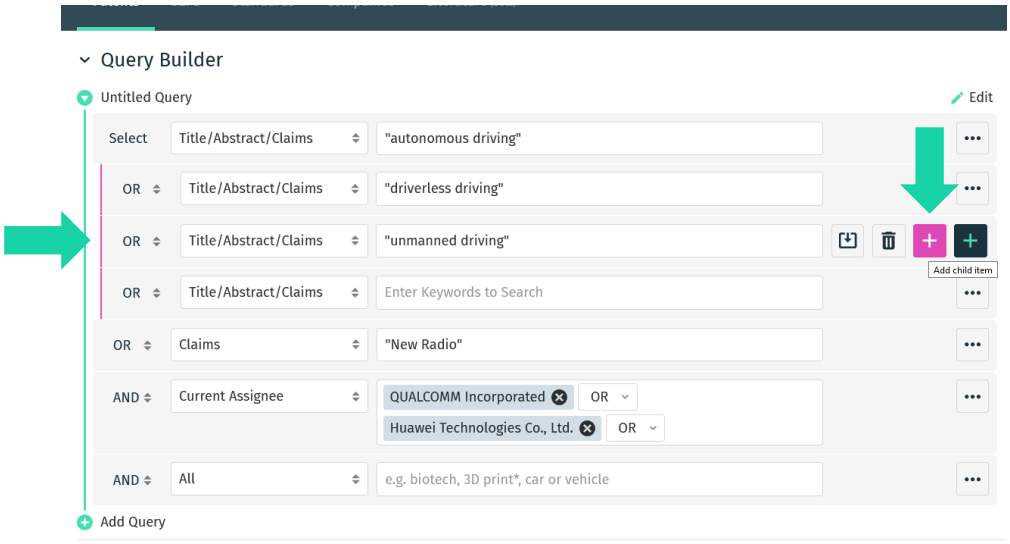
Adding Search Fields

To add additional search fields to your search query simply click the [+] button on the right side of the text field. Clicking the turquoise [+] button further to the right will enable you to add an additional search field. Clicking the purple [+] button further to the left will add a nested search field.



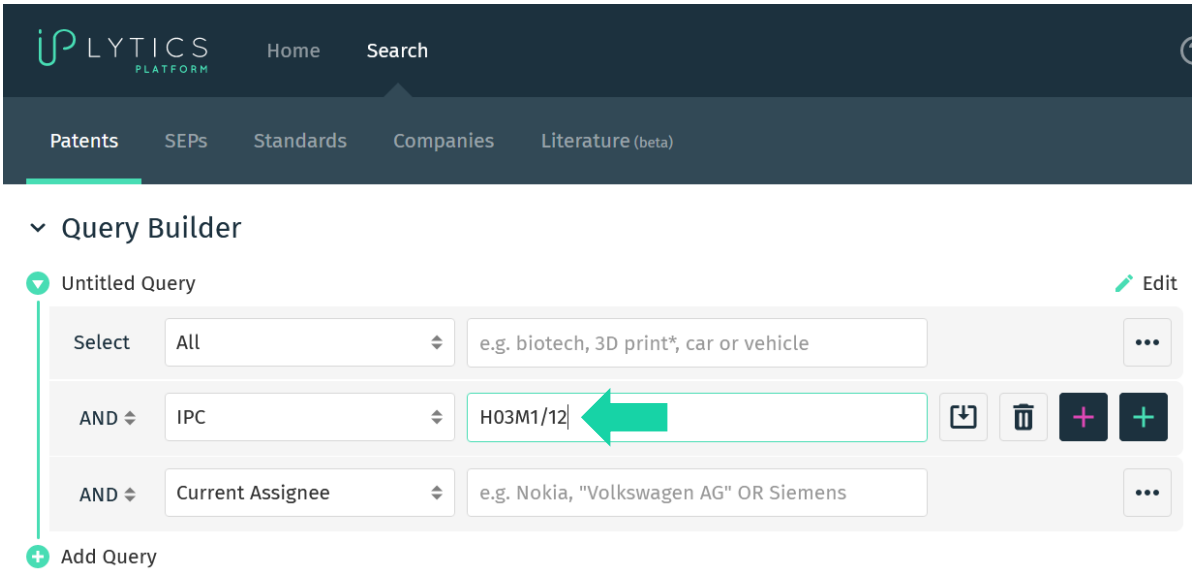
Nested Search

IPlytics Platform supports different ways of creating nested searches. Nesting refers to the use of parentheses to organize a search statement that uses more than one kind of operator (AND, OR, NOT). The visual mode allows you to create a visual nested search group by clicking the purple [+] button. You can put synonyms or alternative terms for the same concept connected by OR into the same nested group to be sure that the database combines your terms correctly. The search fields of a nested group are indented, and the brackets of your nested group are visualized with a purple bar to the left of the search fields.



IPC / CPC Search

When searching for IPC/CPC classes, you can use a common format provided by the IPC or CPC including the slash "/". To use an IPC or CPC classification search all spaces in the alpha-numeric classification should be removed before searching. The following is the correct to search for the class „H03M1/12" (see also screenshot below).

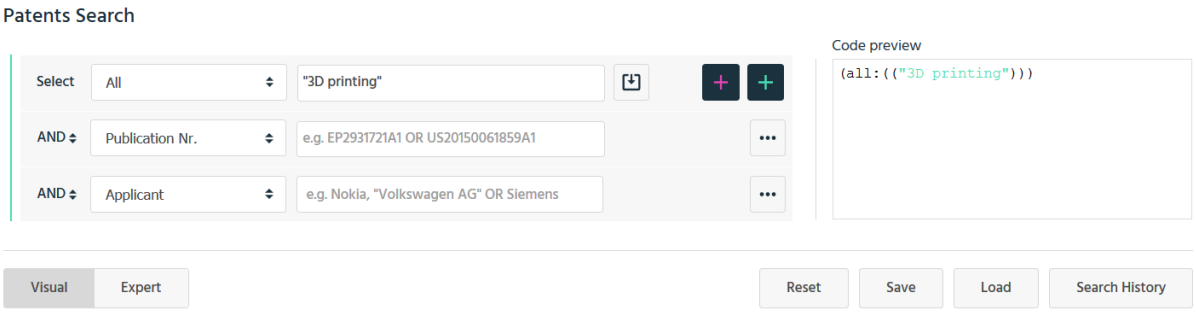


Expert vs. Visual Mode

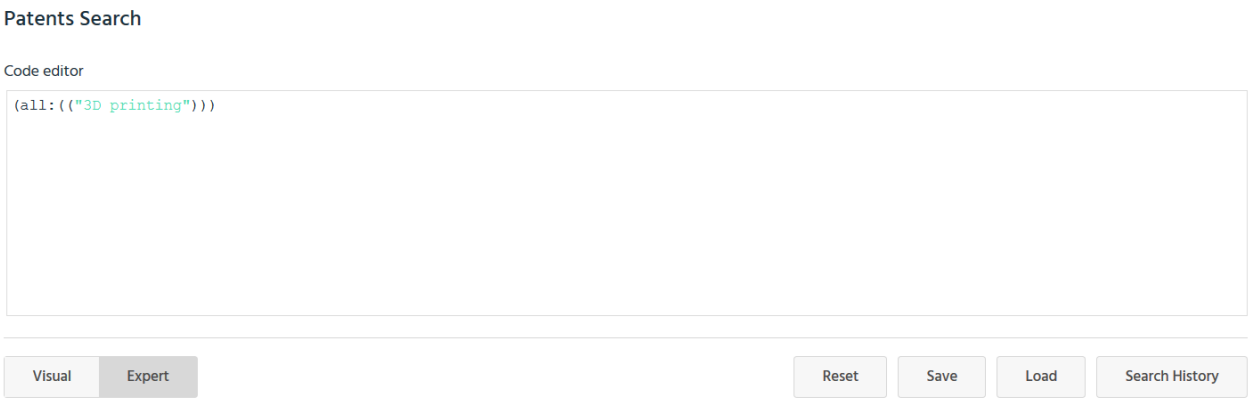
IPlytics Platform offers two general approaches to conduct a search: The visual mode and the expert mode. Both search interfaces can be used alternately, meaning that if you create a search in the visual search mode the query will automatically be transferred to the expert mode. Both search options offer the same functionality.The use of regular expressions is only possible in the expert mode.

Visual Mode

The visual mode provides a code preview window on the right-hand side of the query builder that automatically displays your query in code. This allows you to verify the code of your query.

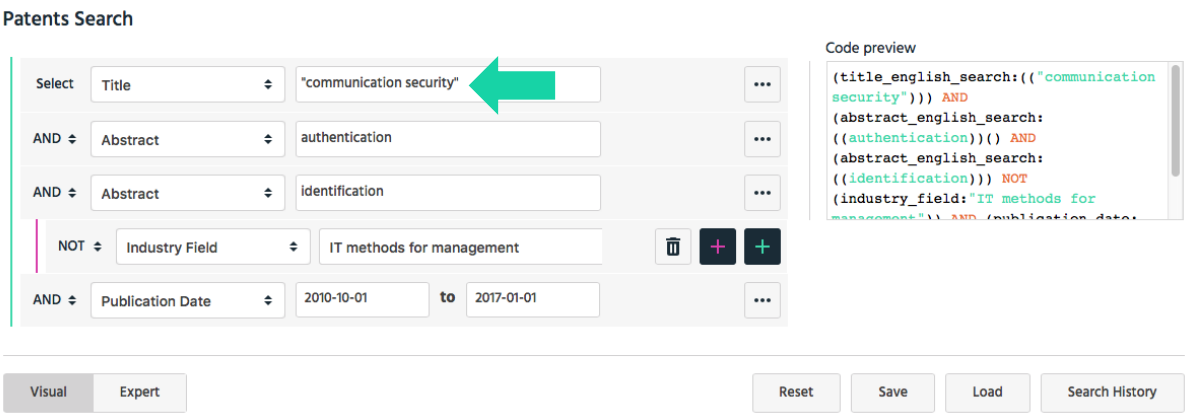


Expert Mode



Keyword matching

IPlytics Platform supports simple searches for single terms like “communication" or for phrases like “communication security” in the different search fields. To combine different search terms or phrases users can add multiple search fields and select from different Boolean operators.



Boolean Operators

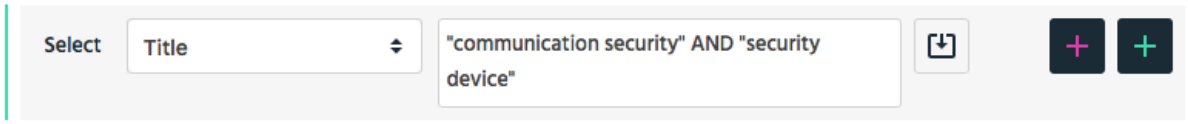
IPlytics Platform supports the Boolean operators AND, OR, and NOT as Boolean operators. Boolean operators allow terms to be combined through logic operators.

Note that Boolean operators must be ALL CAPS.

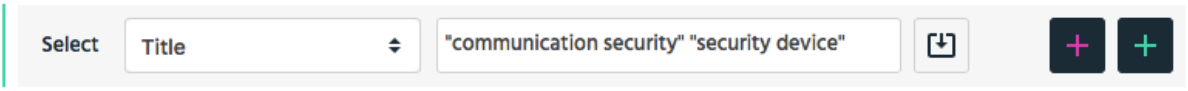
AND

The AND operator is the default conjunction operator. This means that if there is no Boolean operator between two terms, the AND operator is used. The AND operator matches documents where both terms exist anywhere in the text of a single document.

To search for documents that contain "communication security" and "security device" use the query. Be aware that running a search with quotes and without quotes produces different results and executes a different search:



or

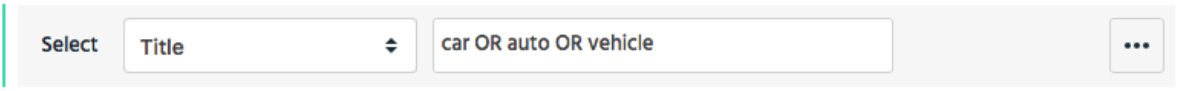


or

OR

The OR operator links two terms and finds a matching document if either of the terms exist in a document.

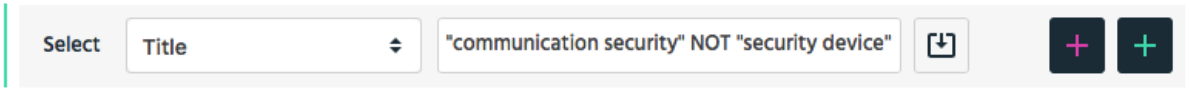
To search for documents that contain either "car" or "vehicle" or “auto” use the query:



NOT

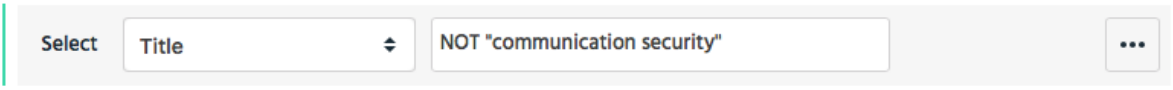
The NOT operator excludes documents that contain the term after NOT.

To search for documents that contain "communication security" but not "security device" use the query:



or

Note that the NOT operator cannot be used with just one term. For example, the following search will return no results:

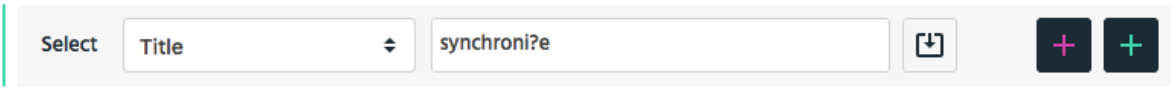


Wildcard matching

IPlytics Platform supports single and multiple character wildcard searches within single terms.

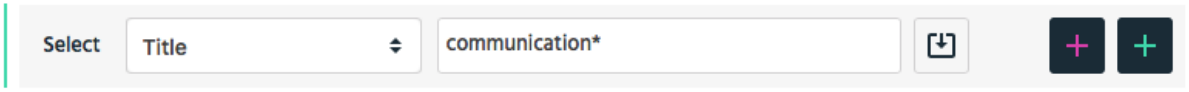
To perform a single character wildcard search, use the "?" symbol. To perform a multiple character wildcard search, use the "*" symbol.

The single character wildcard search looks for terms that match a keyword where one single character is different. For example, to search for "synchronise" or "synchronize" you can use the search:

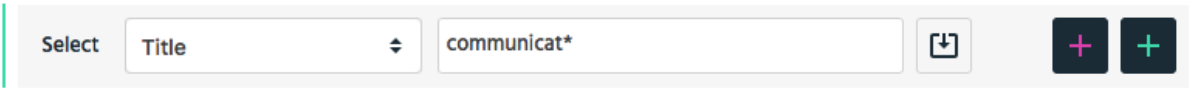


Multiple character wildcard searches look for 0 or more characters.

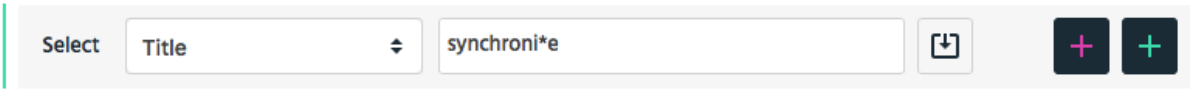
You can search for any word that starts with "communication" in the title field.



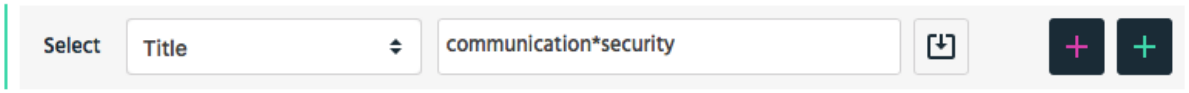
For example, to search for communication, communications, or communicator, you can use the search:



You can also use the wildcard searches in the middle of a term.



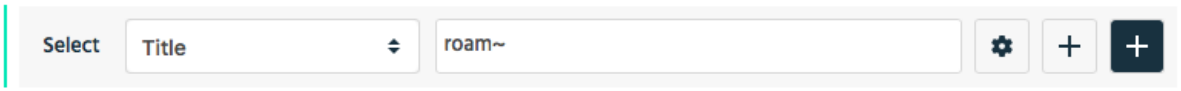
Or search for any word that starts with "communication" and ends with “security” in the title field.



*Note that IPlytics Platform doesn't support using a * or ? symbol as the first character of a search.*

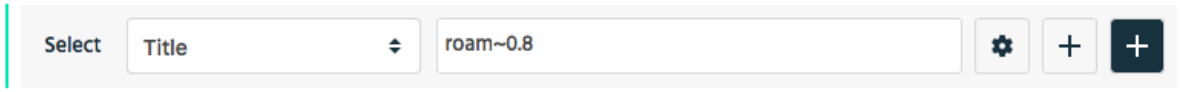
Fuzzy Searches

IPlytics Platform supports fuzzy searches which refers to searches for similar terms. To do a fuzzy search in IPlytics Platform please use the tilde, "~", symbol at the end of a single word term. For example, to search for a term similar in spelling to "roam" use the fuzzy search:



This search will find terms like foam and roams.

An additional (optional) parameter can specify the degree of similarity between terms, the value is between 0 and 1. For example the term roam~0.8 will find similar terms that equal to the original term to at least 80%.

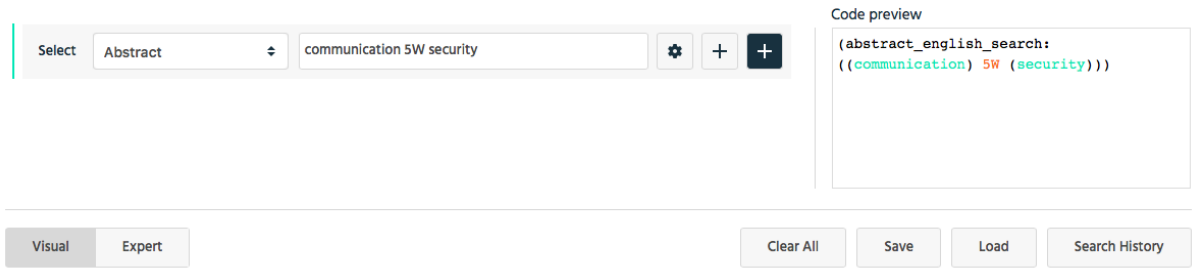


Proximity matching

IPlytics Platform supports finding words within a specific distance of each other. For example, you can search for "communication security" within 5 words from each other. IPlytics Platform provides two different positional operators (W*and* N) to execute such proximity searches. The W and N operators express a positional relationship among their operands. W is ordered, and N is unordered, which means that W will always search for the words entered in a query in the same order as entered in the text field, while N will search for all entered words no matter whether they stand before or behind each other. The distance is 1 by default, meaning the operands are adjacent, or may be provided as a prefix from 2-99.

W Operator

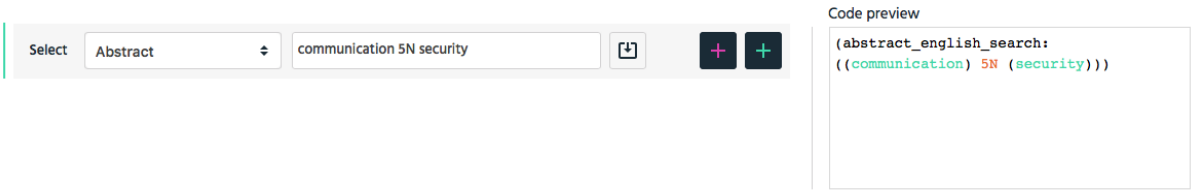
So, for example, *communication 5W security* means that the terms "communication" and "security" must appear within five words of each other, or in other words, up to four words may appear between "communication" and "security". "Security" will in that case always need to appear BEHIND the term "communication".



The proximity matching can also be combined with Boolean operators. *Note that in this case it is essential to put the keywords in parenthesis:*

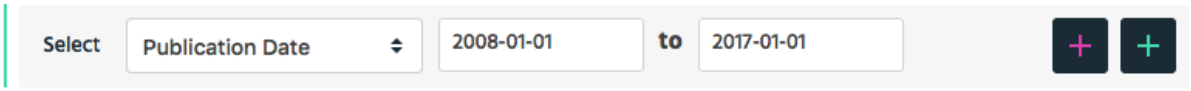
N Operator

On the opposite, *communication 5N security* means that the terms "communication" and "security" must appear within five words of each other while the term "communication" could either appear before or after the term "security".



Range searches

Range Queries allow users to match documents whose field(s) values are between the lower and upper bound specified by the Range Query.



Boosts

Query-time boosts allow IPlytics Platform users to specify which terms/clauses are "more important". The higher the boost factor, the more relevant the term will be,

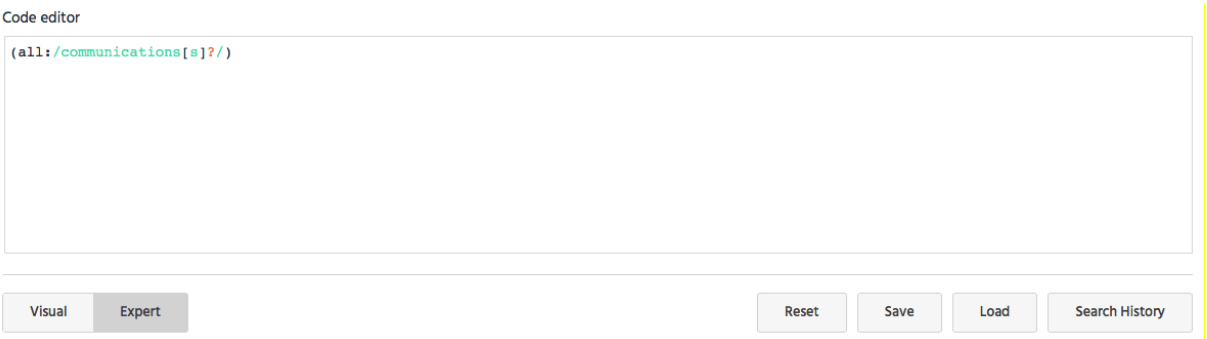
and therefore the higher the corresponding document scores.

In order to boost certain terms please add the ^ symbol along with the appropriate boost weight in the search body:

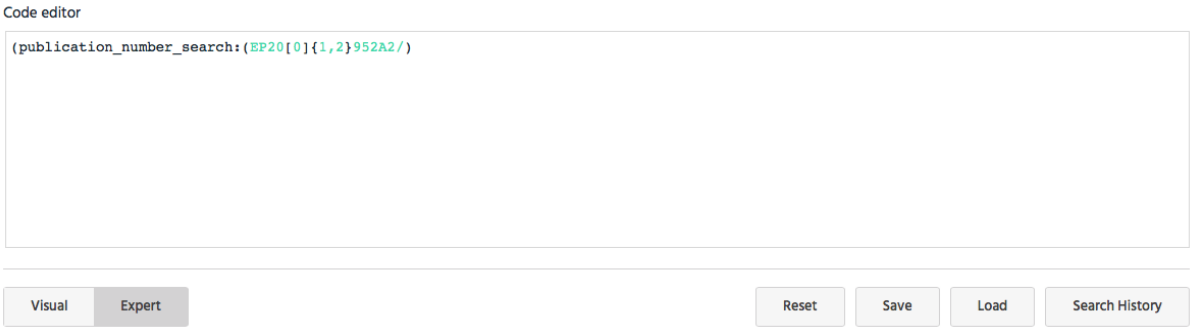
Regular Expressions

→ only available in expert-mode

Within the export-mode IPlytics Platform offers the possibility to further narrow down a search by means of regular expressions. A regular expression is introduced after the search field specification and colon and also closed by means of a slash. For example, the expression „all:/communication[s]?/“ searches for a term that begins with „communication“ and optionally ends with an „s“. The set of characters can be extended as desired. For example, the expression „all:/synchroni[sz]e/“would either search for „synchroni**s**e“, or for „synchroni**z**e“:

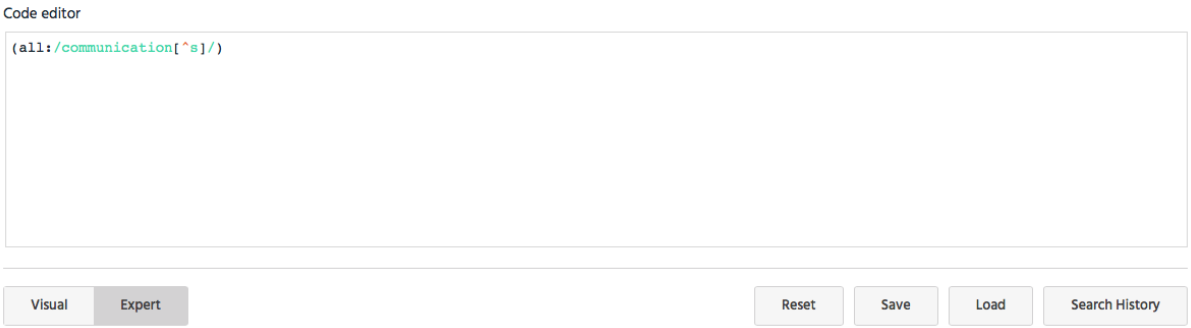


Operators can be explicitly specified by means of ∗,+,? as well as the use of curly brackets { }. For example, the expression below comprises both, the publication number „EP2000952A2“, as well as the publication number „EP200952A2“.



A set of characters can also be inverted. Thus, the expression

„all:/communication[^s]/“would embrace any term that begins with „communication“ and whose last character does not include an **s**.



Note that a regular expression always relates to a term and never reaches beyond word boundaries. To express several terms using regular expressions, a new regular expression must be introduced for each term.

Appendix 1

Self-Declared Standard Essential Patent Data (1978-2021)

SSO	Example Standards	Declared SEPs
ETSI	2G, 3G, 4G, 5G, NB IoT, LTE-E, ITS, C-V2X, DVB, DMR, DECT, TERA	280,00
ITUT	AVC H.264, HEVC H.265, VVC H.266	15,000
ATSC	ATSC -1.0- 3.0, Over the Air Internet TV Broadcasting	9,900
ISO	RFID, MPEG 1-4, mp3	4,800
ATIS	2G, 3G, 4G, 5G	4,700
IETF	Internet Protocol Standards	1,700
IEEE	Wi-Fi 1-7, DSRC, WAVE, LAN/MAN, Bluetooth, ZigBee, FireWire, WiMAX, Ethernet	1,500
ARIB	2G, 3G, 4G, 5G	1,500
Wireless Power Con.	Wireless Charging Qi Standard	1,100
ISO/IEC	MPEG Visual	1,100
SMPTE	Motion Picture and Television	800
OMA	GSM, UMTS or CDMA2000	700
IEEE / IEC	Wi-Fi 1-7, DSRC, WAVE, LAN/MAN, Bluetooth, ZigBee, FireWire, WiMAX, Ethernet	260

SSO	Example Standards	Declared SEPs
ANSI	Wi-Fi 1-7, LAN/MAN, Bluetooth, ZigBee, FireWire, WiMAX, Ethernet	210
IEC	Electric vehicle conductive charging, Industrial Networks, CQN series RF, RFID	113
ATSC	Advanced Television Systems, Digital Television Transmission over Terrestrial	81
ITUR	Radio Transmission	44
VESA	DisplayPort	40
OASIS	XrML WSRP UOML | UOML UDDI	35
Broadband Forum	Ethernet, ADSL, DSL, Optical Fiber	21
TIA	TDMA, CDMA, WCDMA	19
CEN	IST, Electronic Identification, Authentication and Trusted Services	12
SAE	Broadband PLC Communication for Plug-in Electric Vehicles, Mobile Fueling Station, Gas Supply System	7
ECMA	NFC	1

Standards Document Data top 20 (1883-2021)

SSO	Information available	Document Count
DIN German Standards Institution	meta data	225,066
ASTM	meta data	113,002
BSI British Standards Institution	meta data	94,531
ISO	meta data	88,695
NEN Dutch Standards Institution	meta data	87,379
CEN	meta data	72,074
ASI	meta data	69,443
TSE	meta data	68,077
AFNOR	meta data	63,323
ETSI - Standards	Full text	51,843
LST	meta data	44,046
SIS	meta data	43,592
UNI	meta data	41,913
IEC	meta data	40,608
ANSI	meta data	39,433
CENELEC	meta data	32,730
ITU	meta data	11,503

Standards Contribution Data (1990-2021)

SSO	Information available	Contribution Count
ETSI - 3GPP	full text	1,209,993
IEEE	full text	118,987
JCT-VC (ITU HEVC)	full text	9,742
IETF	full text	8,774
JVET (ITU VVC)	full text	8,473
JVT (ITU AVC)	full text	3,051

- Company / Engineer
- Agreed/Approved Status
- Group / Subgroup
- Standard Generation
- References
- Category (Tech Input v Correction)

Appendix 2

ETSI Standards Projects

ETSI standard project	Declaration documents for this standard project as to the number of combination of patents and standards
LTE	699,388
UMTS	353,142
3GPP	182,995
3GPP-EUTRAN	162,120
New Radio(NR)	122,783
5G	122,462
3GPP-Release-15	121,644
3GPP-Release-8	93,357
3GPP 5G NR	90,891
3GPP-Release-10	90,820
GSM	79,680
LTE Advanced Pro/5G	56,183
3GPP NR Rel 15	51,719
3GPP-Release-12	40,389
3GPP-Release-11	37,422
GPRS	34,121
3GPP-Release-15 (GSM Phase 2+, UMTS, LTE, NR release 15)	29,695
GERAN	27,978
3GPP 5G	27,740
3GPP-Release-13	23,700
3GPP-Release-9	22,976
SAES	20,345
LTE-A	19,864
New Core(NC)	16,971
NR	12,310
3GPP LTE	12,225
WCDMA	12,031
TD-SCDMA	11,758
3GPP-Release-1999	11,014
EVS_codec	10,175
3GPP-Release-7	9,932
5G Release 16	9,851
DVB	9,598
3GPP-Release-14	8,771
3GPP-Release-6	8,156
NBIoT	7,458
AMRWB	7,116
3GPP-GERAN	6,548
3GPP-Release-16	5,007
LTE-V	4,627
HIPERMAN	4,417
3GPP-Release-5	2,808
3GPP-radio	2,545
GERAN Release 9	2,111
Pool Program: MCP	2,103
Pool Program: LTE/LTE-A	1,975
IMS	1,864
oneM2M	1,503
eEurope	1,286
TETRA	1,250
Pool Program: EVS	1,249
-	1,213
5G Release 15	1,188
3GPP-CN	1,172
3GPP-Release-15 (LTE-Advanced Pro, NR release 15)	1,140
3GPP-UTRAN	1,091
5G Release 17	1,056
RRS	1,019
4G	959
MMB Release 1	940
LTE-Advanced/5G	939
AMRWB+	938
3GPP-Release-4	863
DAB	861
3GPP Release-15	851
SECURITY	824
DVB-T2	799
GSM Release 4	792
Pool Program: 3G Licensing	760
oneM2M-Release-1	751
oneM2M-Release-2	740
Hybrid Broadcast Broadband TV	732
3G	684
Speech Recognition	607
LTE_Relay	538
DECT	510
Pool Program: DVB-T2	450
ETSI M2M	425
GERAN Release 6	422
AlgUEA2	420
3GPP - RAN1	419
oneM2M Release 1	412
3GPP-RAN	362
ETSI SCP	358
MMB	353
LTE/EPS Release 9	350
3GPP-Release-1998	314
Family SL	310
HSPA+	294
LTE_CA	276
Pool Program: DVB-T	271
GSM Release 7	264
LCS	264
3GPP-RAN2	253
3GPP-SA	253
DCS 1800	248
NFV	246
Smart Card	244
BRAN	241
ETSI RRS	241