LYTICS | Intellectual Property Analytics

Connecting The Dots Webinar Series Part 1 :

SEP Portfolio Management

May 17th, 2022

Recording: https://youtu.be/TRgoLNW2WDE

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IPlytics Navigate Risk Webinar Series 2021

I. Connecting The Dots Part 1: "SEP Portfolio Management"
May 17th, 2022
Recording: https://www.iplytics.com/events/past/

II. Connecting The Dots Part 2: "SEP Licensing, Transaction and Litigation"
July, 2022
Register: https://www.iplytics.com/events/upcoming/

III. Connecting The Dots Part 3: "SEP Research and Development"
August, 2022
Register: https://www.iplytics.com/events/upcoming/

Today's Speaker

- PhD and Post Doc. from CERNA, **MINES ParisTech** and **TU Berlin**.
- CEO and founder of IPlytics.
- 2022 IAM Strategist 300. Panel speaker thought leader.
- Appointed faculty lecturer at:
  - **Technical University of Berlin -** Strategic Standardization
  - **CEIPI Université de Strasbourg -** SEPs and FRAND licensing
  - **EPFL Lausanne -** Big Data Driven Patent Intelligence
  - **PATON Ilmenau** – The Interplay of Patents and Standards
  - **European Patent Office** – SEP / FRAND and standards development

SEPs and the next technological revolution

5G subscription trends

→ We are only at the very beginning of 5G deployments!

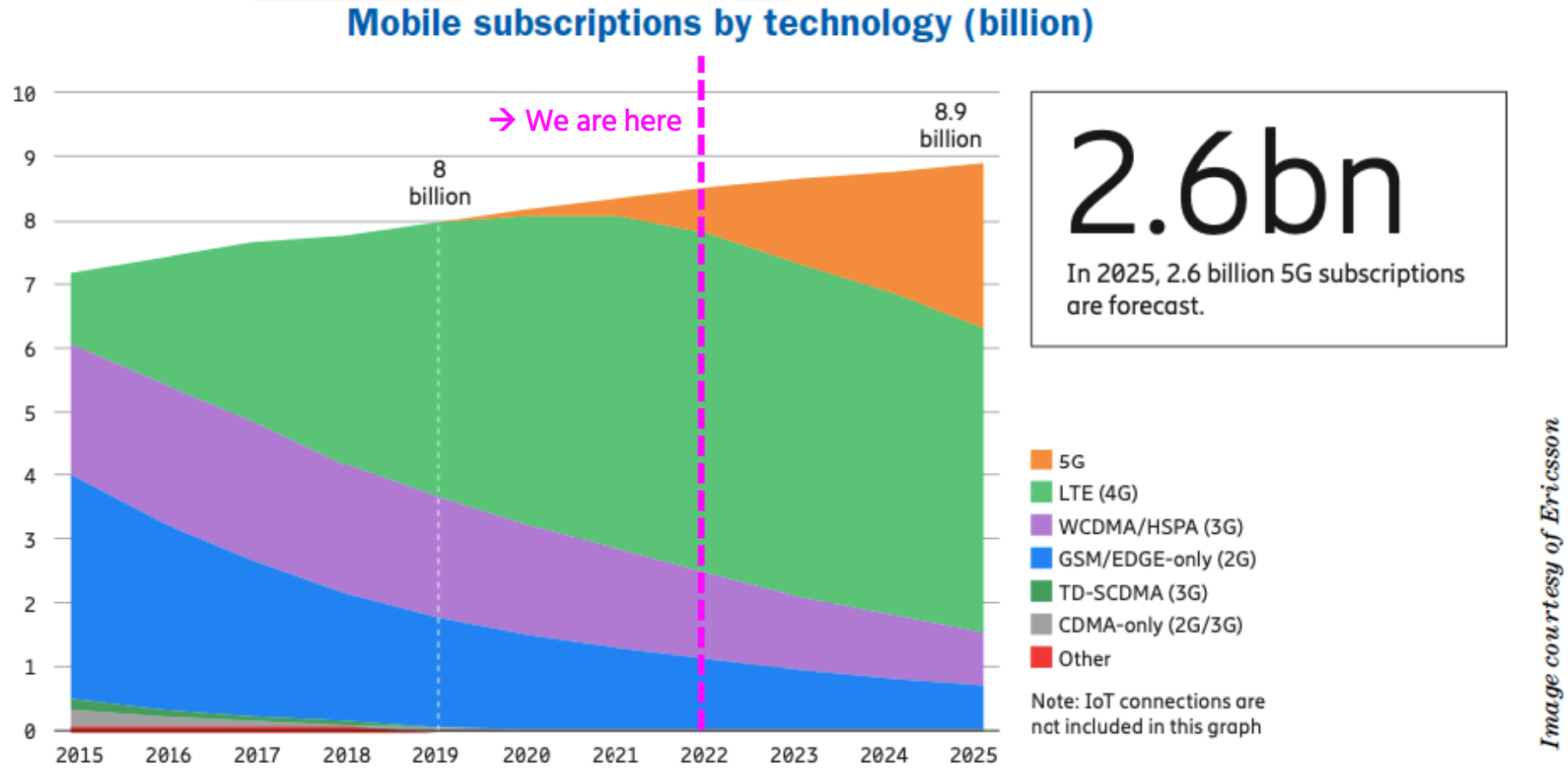
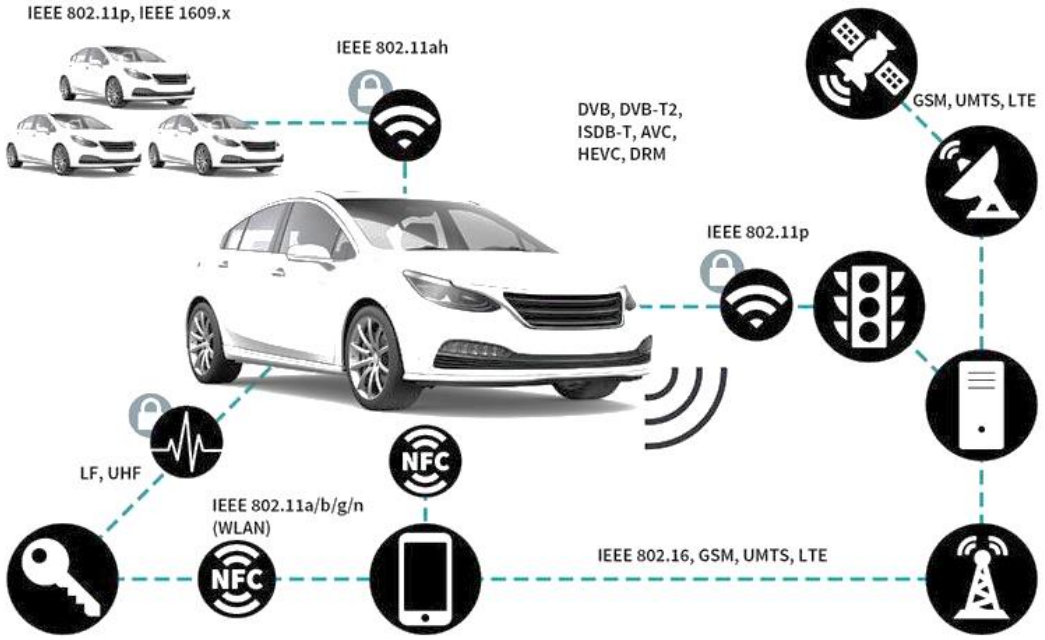


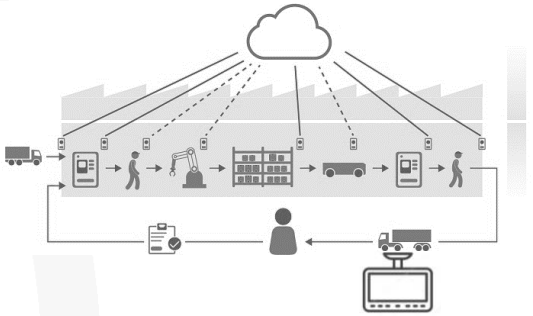
Image courtesy of Ericsson

Standards in the connected world

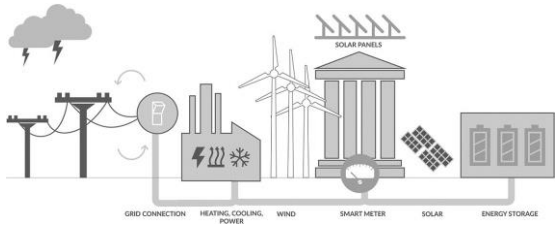
Smart Cars



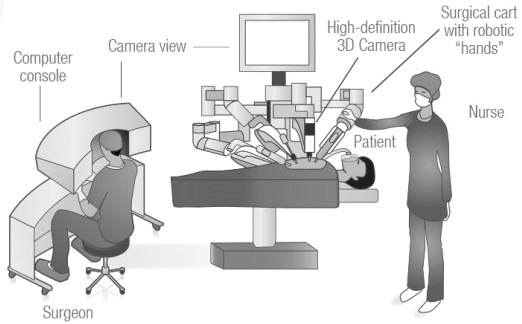
Smart Factory



Smart Energy

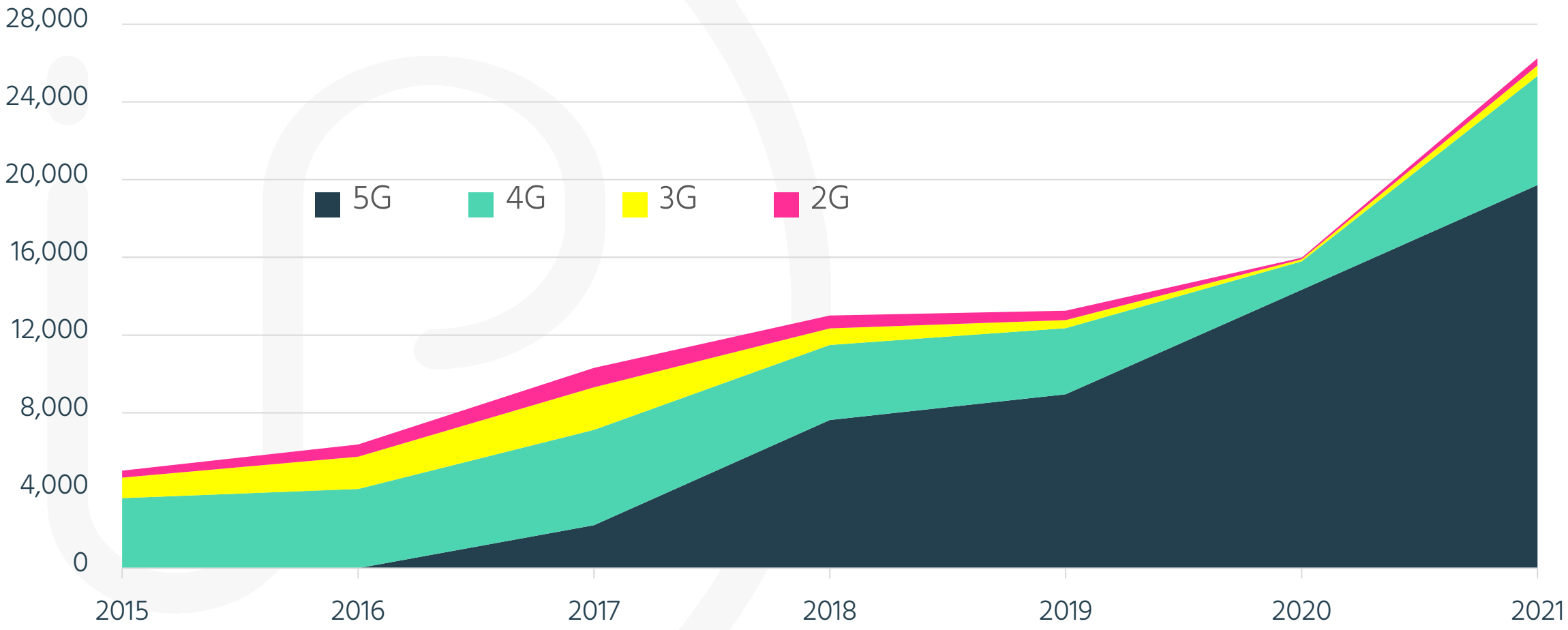


Smart Healthcare



Smart Home

3G, 4G, 5G declared patent families by declaration year



Source: https://www.iplytics.com/report/5g-patent-race-november-2021/

SEPs and legal risks across industries

The future of 5G – Challenges for SEP licensing

As to a Deloitte study published 2021:

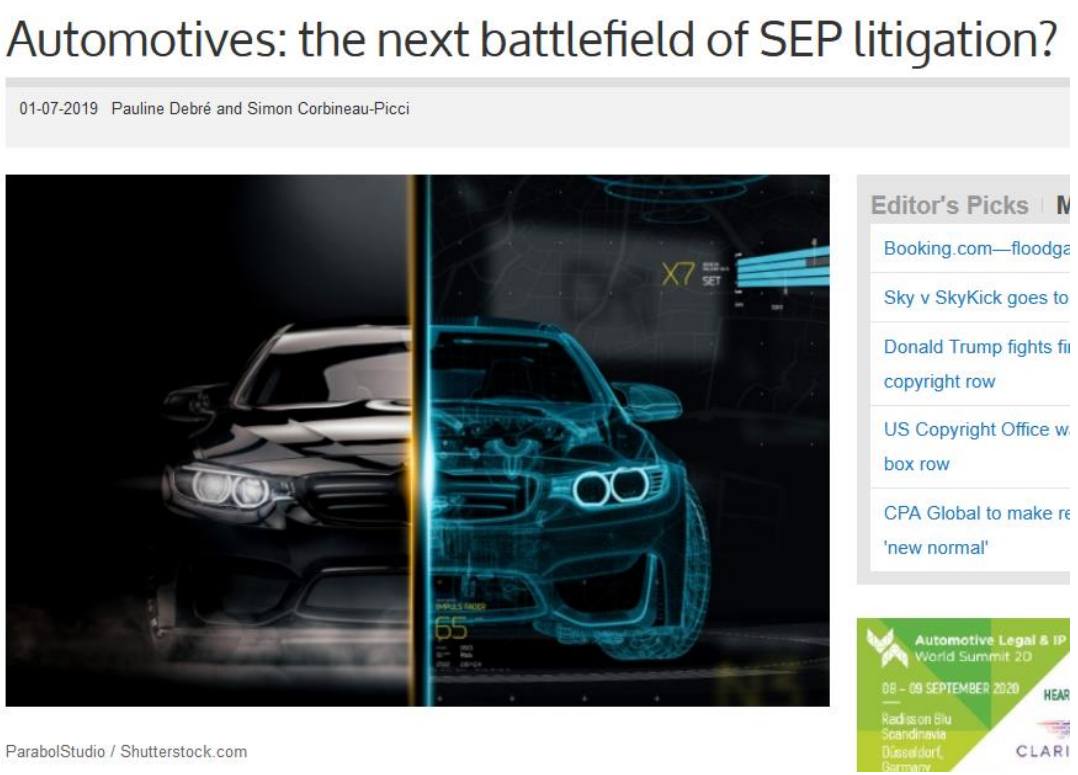
- "The majority of **SEP holders** will actively monetize and **enforce their SEP portfolios** covering 5G standards in this fast-moving, high-investment environment."

- "SEP owners as well as standard implementers are faced with the challenge to **manage operational and financial risks** and cost exposures while striving to maximize value."

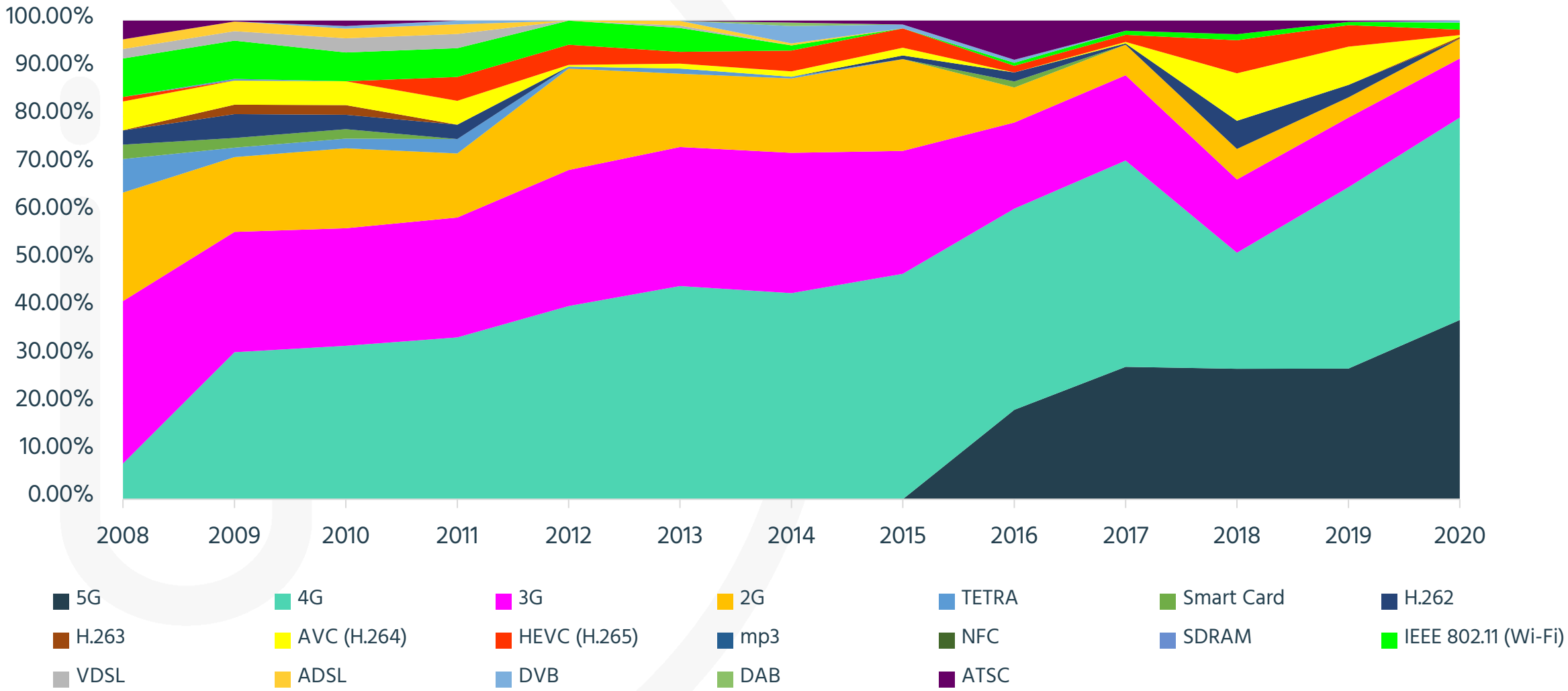
SEP litigation cases

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)
- Optis/Unwired vs. Ford Motors (USA, 2022)



Standards subject to SEP litigation 2001-2021

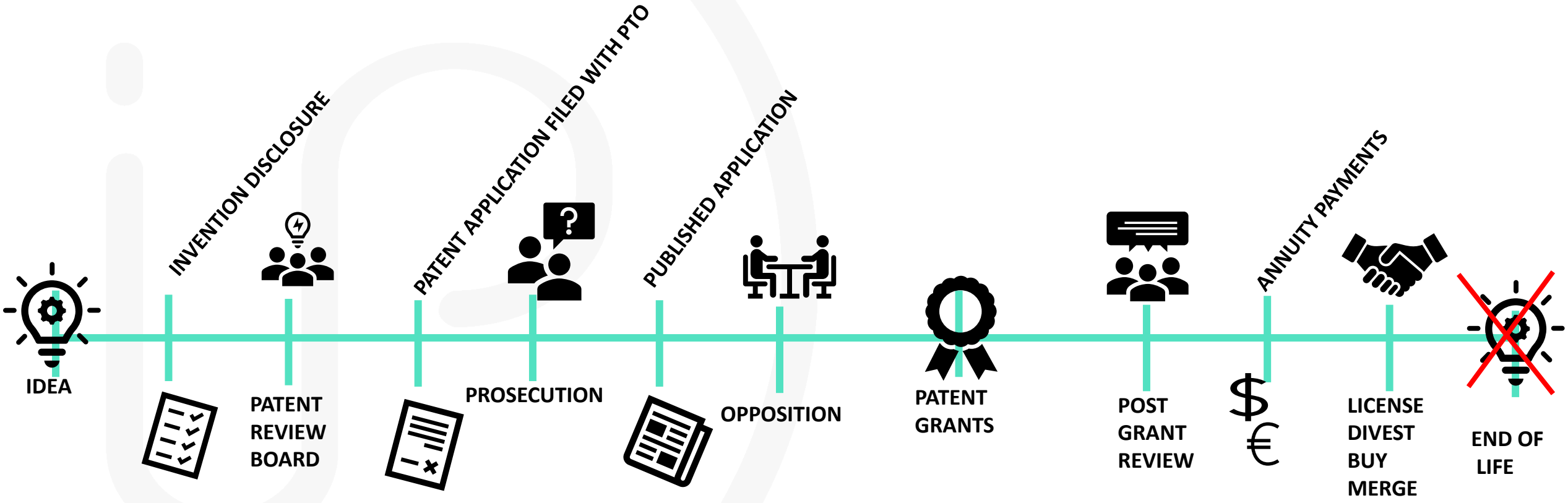


Increasing complexity

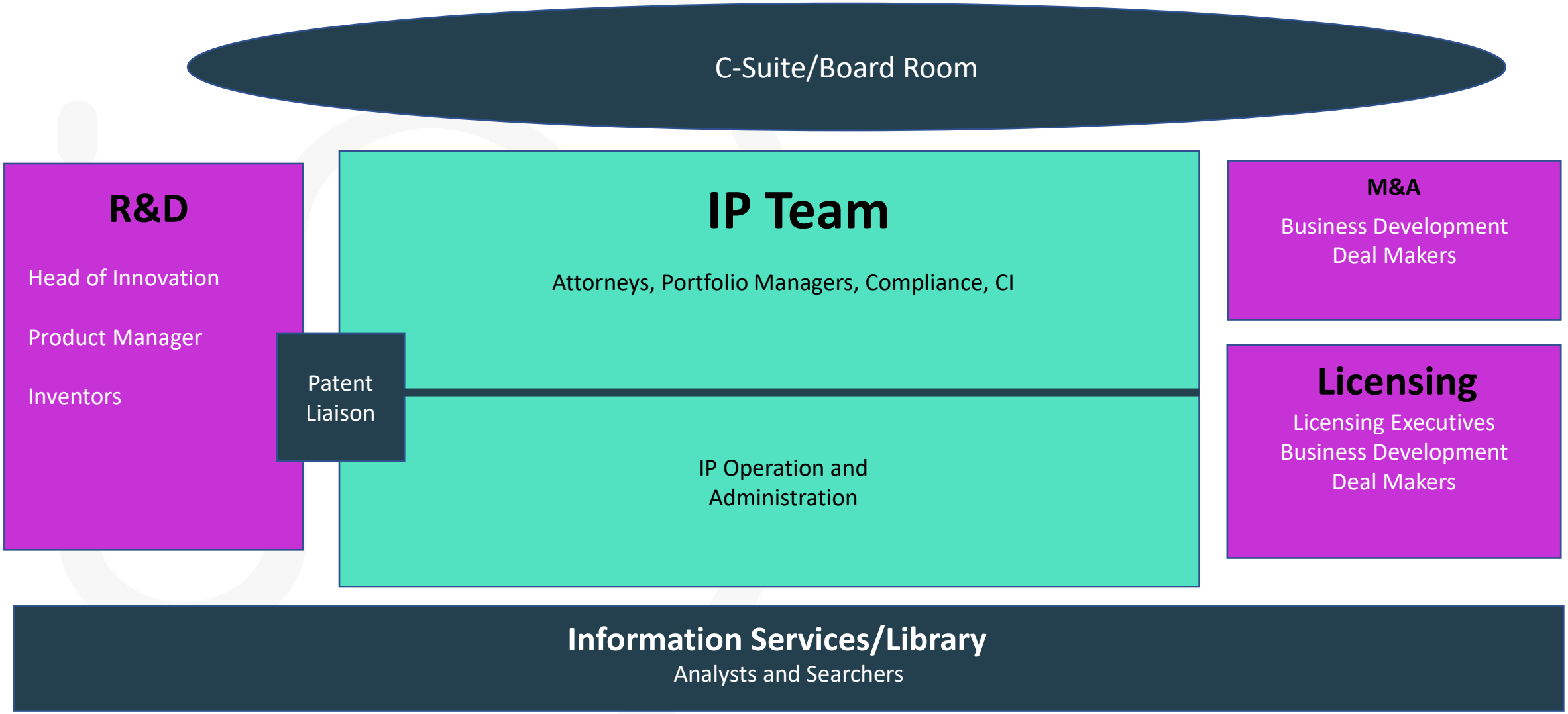
- **Connectivity is everywhere**, and it heavily relies on standards that are subject to SEPs.
- The **number and variety of use case of standardized connectivity** technology has increased over the past 5 years with a growing number of newly implemented standard subject to SEPs (e.g. SAE standards, Qi standard)
- It is challenging to **keep up with technology trends**, new standards projects as well as SEPs or new pool license programs.
- **Multidimension access** to patents and standards data is crucial to be part of the discussion and have a seat at the table where standards are developed, patents are licensed, and pools are formed.

Details on personas and decision makers

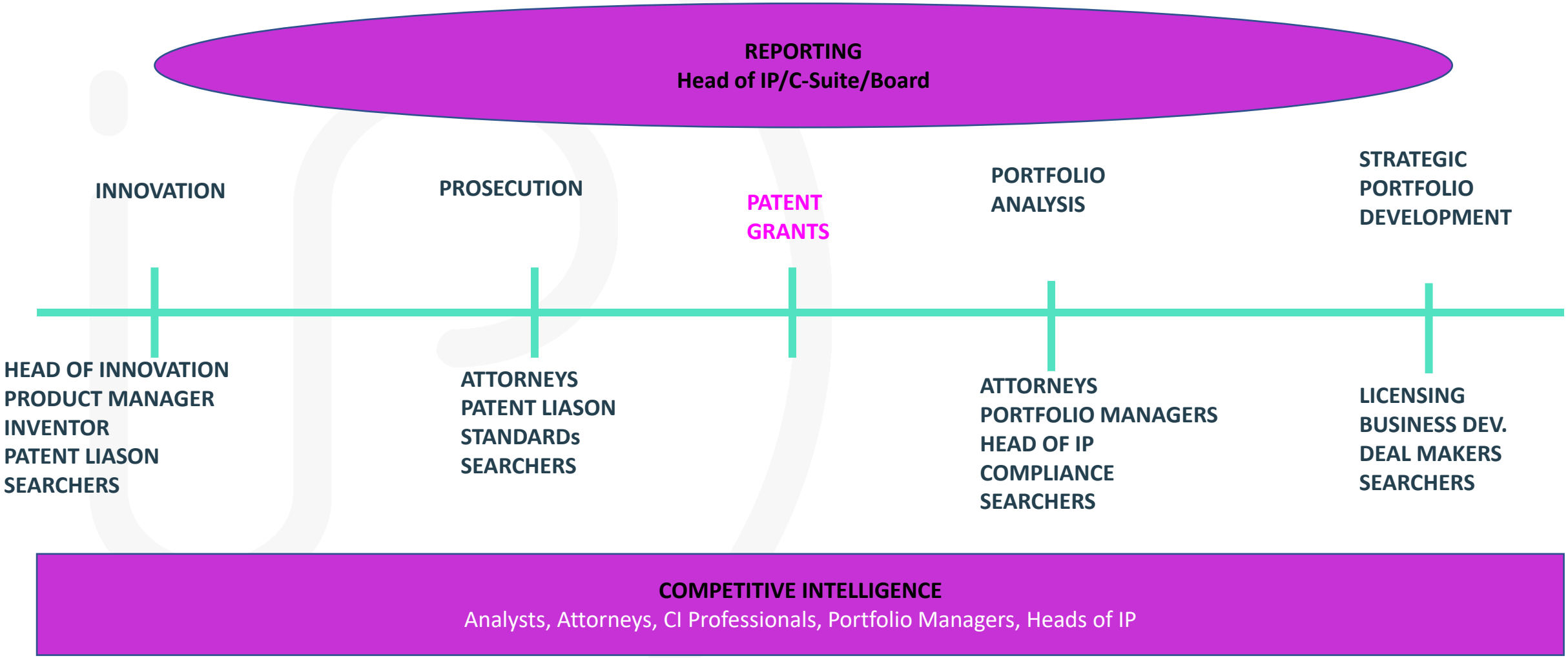
Life of a Patent – Key Decisions



Corporate Layout of Personas



Key Events in the Life of a Patent by Persona



Key Events in the Life of a Patent by Use Case

INNOVATION
R&D, Patent Liason

- Whitespace
- Technology Landscaping
- New Idea Development
- Competitive Monitoring
- Technology Scouting
- New Product Development
- Innovation Partnerships
- Search & Patent Review

PROSECUTION
Legal IP Team, Searchers

- FTO/Prior Art
- Validity/invalidity
- Reporting

PATENT GRANTS

PORTFOLIO ANALYSIS
Portfolio Managers Attorneys, CI Pros, Head of IP, Searchers

- SWOT Analysis
- Gap Analysis
- Portfolio Comparison
- Portfolio Breakdown
- Landscaping
- Keep/Kill Decisions
- Risk Mitigation
- Reporting

STRATEGIC PORTFOLIO DEVELOPMENT
Licensing Execs, Biz Dev, Deal Makers, Analysts

License Target Identification
Portfolio Due Diligence
Portfolio Identification
Target Portfolio Evaluation
Claims Charting
Landscaping
Risk Assessment
Licensing Negotiations

Personas in Context – IP Leader

IP Team

Titles: Chief IP Officer, Head of IP, VP of IP, Associate IP Counsel, Director of IP

What do they do:

- Responsible for all IP systems and processes
- Responsible for entire IP portfolios, management and creation
- **Owns the budget for all IP**
- **Mitigates** the company from **risk** from IP
- **Aligns** the business **strategy** with the IP **strategy**
- Is the internal IP **thought leader**
- Establishes/conducts training for Non-IP professionals
- Decides on and works with chosen Outside Counsel
- Runs a team of IP attorneys, paralegals, portfolio managers
- **Represents IP at the C-Suite and Boardroom level**

What are their Challenges/Goals:

- Demonstrating and **defending the value of IP**
- **Promoting/reporting** IP to business leaders
- Reducing costs, doing more with less resources
- Working more efficiently across the team/company on all IP matters e.g. between legal and R&D
- No mistakes; Flawless risk management strategies

All Strategic Portfolio Development Use Cases

Decision Maker

Personas in Context – inhouse IP Attorney

IP Team

Titles: IP Attorney, IP Counsel, Prosecution Attorney, Patent Agent, Patent Attorney

What do they do:

- Responsible for review of **invention disclosures from R&D**
- Prepare and process patent applications working with the PTO and/or Outside Counsel. Usually specialize in a certain technology area.
- Conduct preliminary **prior art/FTO** searches.
- Advise other departments on all things IP e.g., R&D, licensing.
- Are part of the **invention review committee** and can interface with portfolio managers/R&D for portfolio decisions e.g., patent abandonment decisions.
- Generally, tend to be very risk averse in nature and exacting when it comes to the accuracy of their work

What are their Challenges/Goals:

- Accuracy in their work
- Maximizing and streamlining their internal processes
- Balancing the IP processes and systems with the commercial needs of the business
- Expected to go above and beyond their traditional role and responsibilities

Use Cases

- All Portfolio Management Use Cases dependent on responsibilities.
- Prior Art

Influencer

Personas in Context – Portfolio Manager

IP Team

Titles: Portfolio Manager, Attorney.

What do they do:

- Responsible for overseeing all aspects of a **portfolio**, usually focused on their given **technology expertise**
- Keep up to date, together with lead inventors, on all new **competitors or developments** in their technology
- Oversee invention disclosures; **keep/kill decisions**
- Execute on the IP strategy as it relates to the business strategy for their **portfolio and product line**
- Work closely with R&D, licensing and M&A for all strategic portfolio development needs
- Responsible for **reporting** regularly on the progress/successes of their portfolio as it relates to the **business and competition**

What are their Challenges/Goals:

- Efficiently working across teams
- Easily and efficiently reporting out on the state of the portfolio (**SWOT**) and competitors.
- Being on the same page as R&D regarding new products and projects
- With large portfolios understanding:
  - What **patents belong behind what products**
  - What **patents could be licensed**
  - Where are the **gaps, issues, risks**
- Commercial awareness

All Portfolio Management Use Cases

Influencer

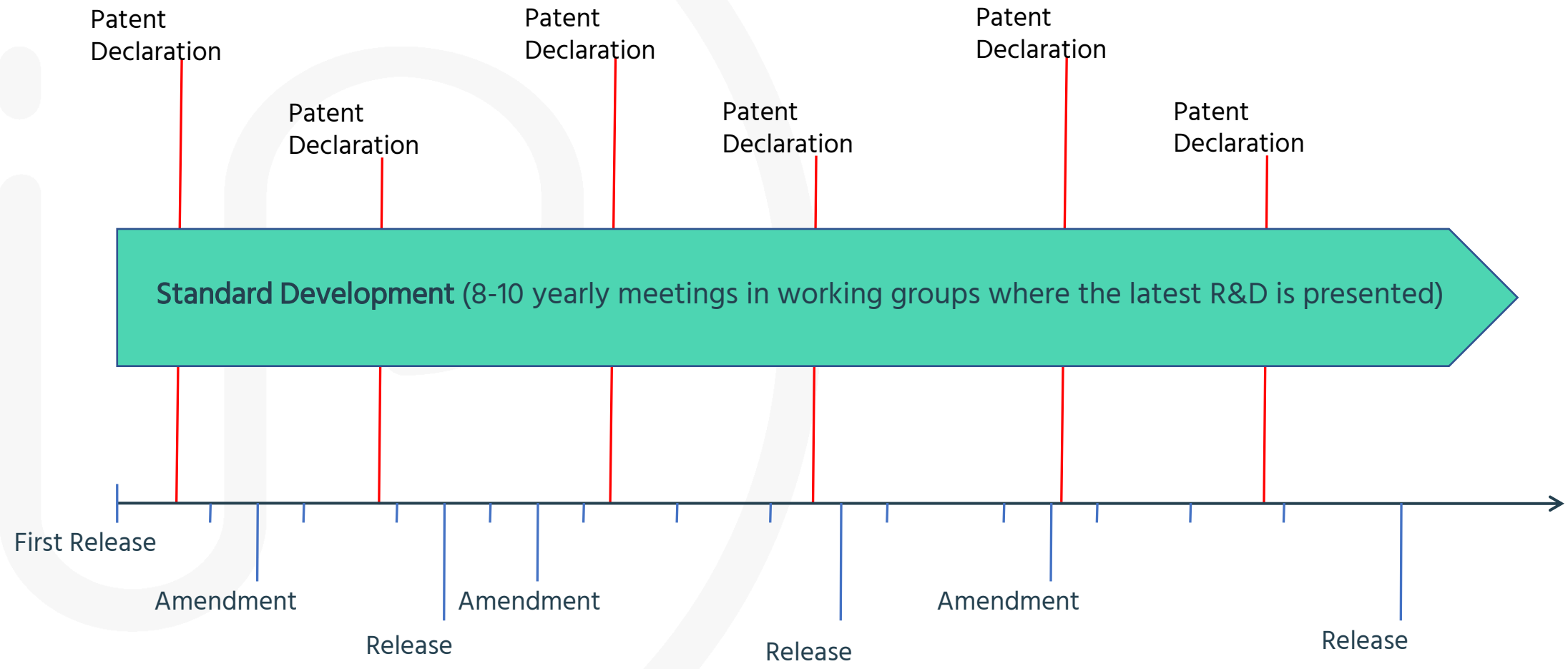
Patent Portfolio Management for SEPs & Standards

How to build a portfolio with limited budget?

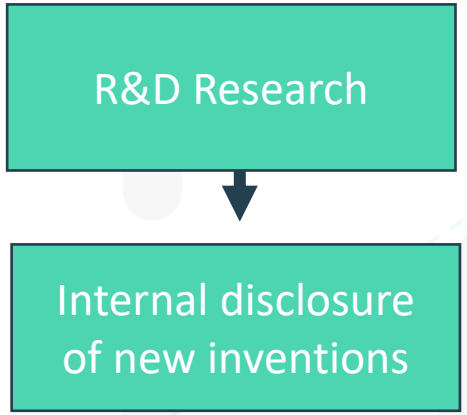
- As of a survey from 2021 0ver **$40 billion is spent on patents** each year
- Over 75% of patent owners agree that a well-balanced patent portfolio **reduces the risk of patent litigation**
- Strategic investment in patents mitigates exposure to damages and royalties, an estimated **5% of company revenue**
- However, current supply chain challenges, inflation and economic crisis **decrease budgets** available on patent portfolio development and patent portfolio maintenance
- Patent **invalidation rates** are twice as high for **SEPs** compared to other patents → risk for SEP owners
- The **essentiality rate** of declared patents for cellular technologies (3G-5G) decreased from about **30-40% in 2015** to only **10-15% in 2021**.

How to ensure that patents are both valid and essential?

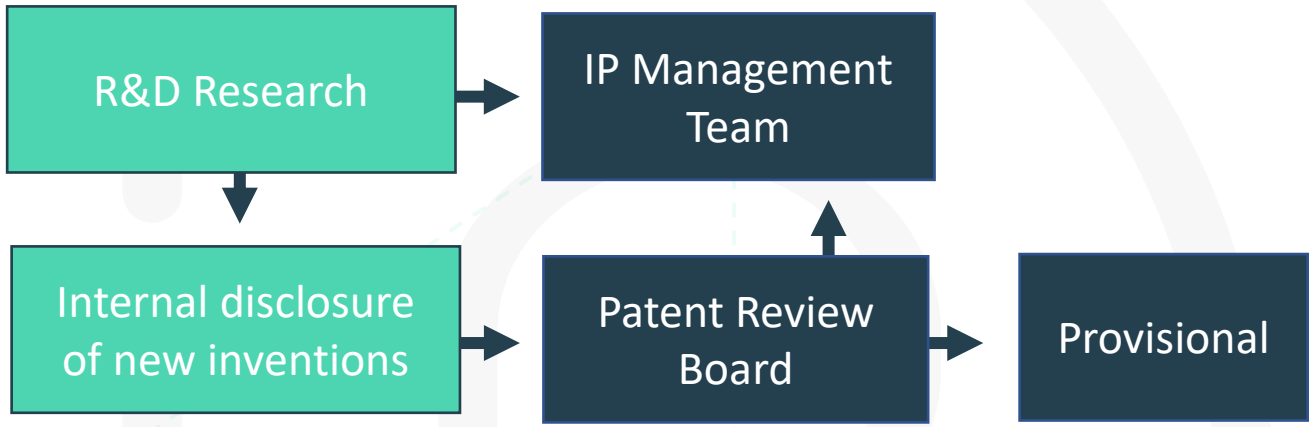
Standards development and patent declarations



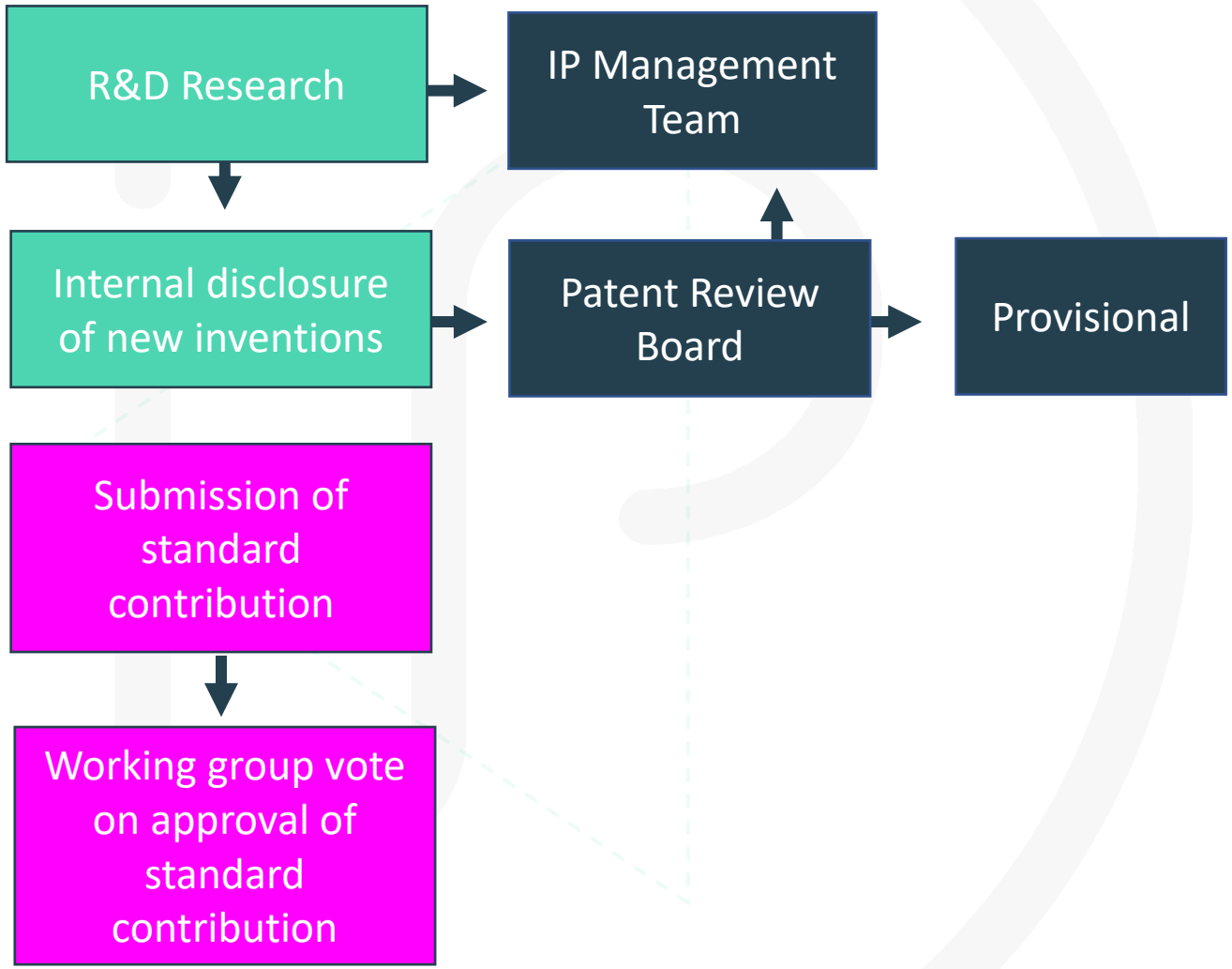
SEP filing process 1/7



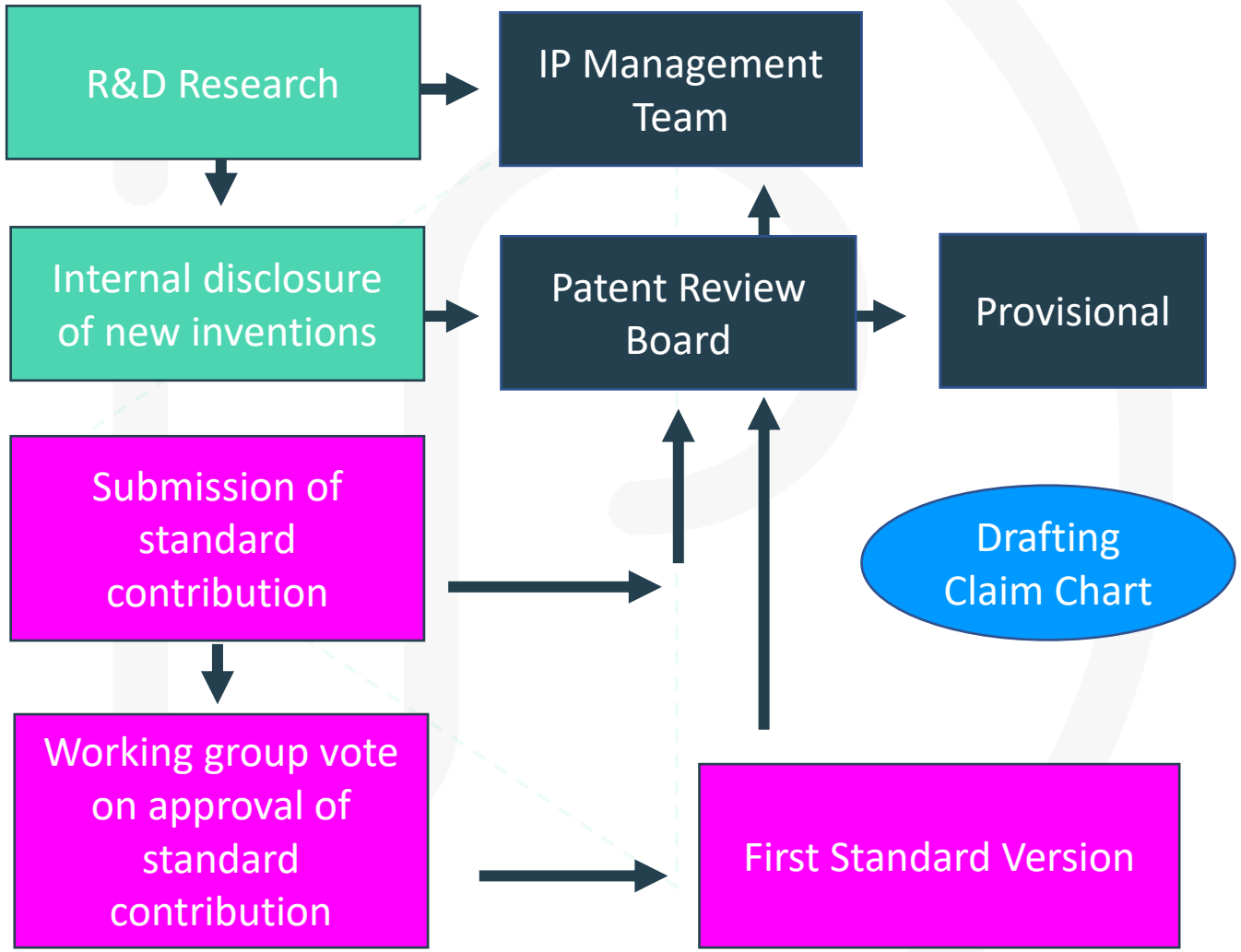
SEP filing process 2/7



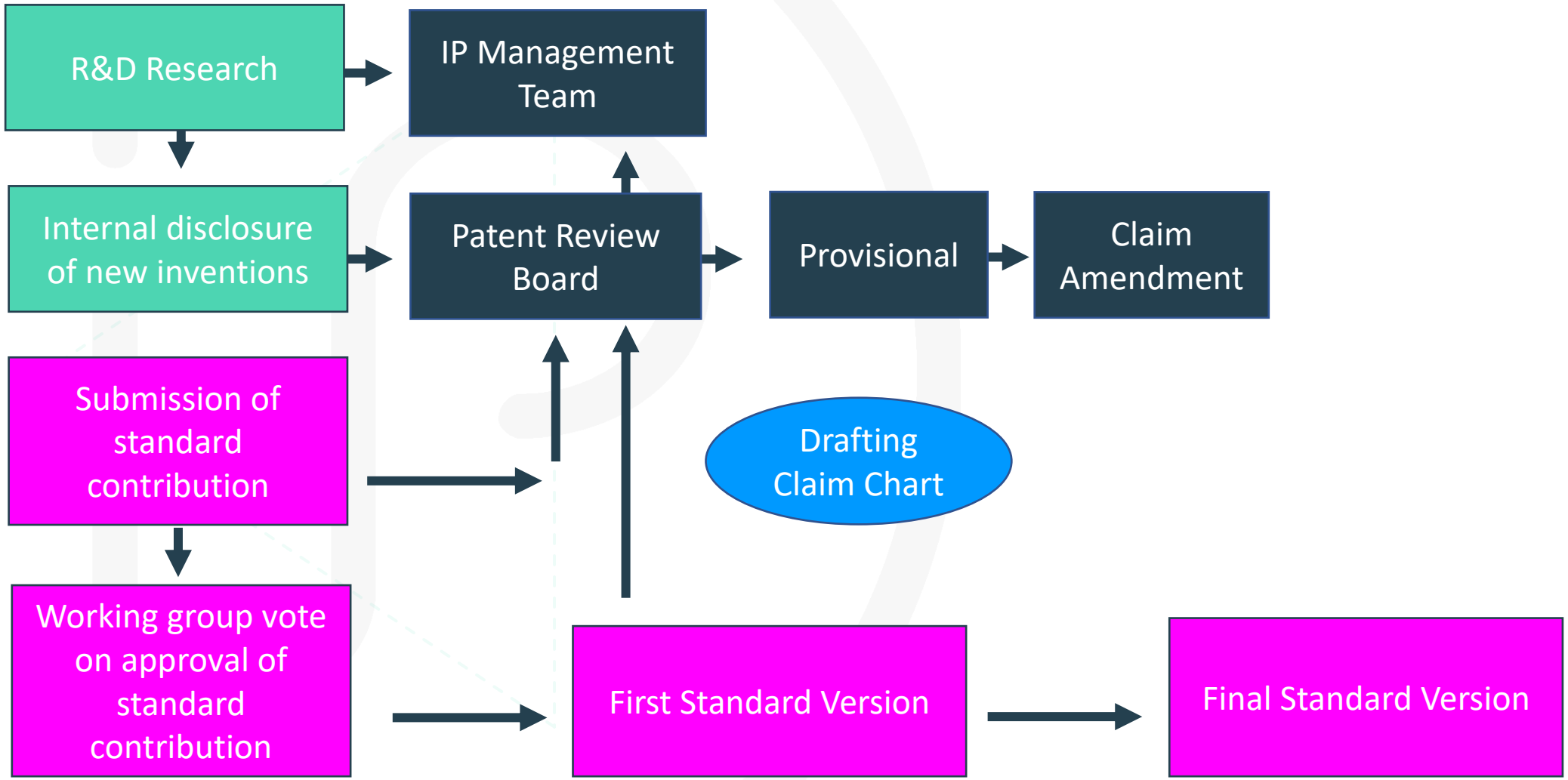
SEP filing process 3/7



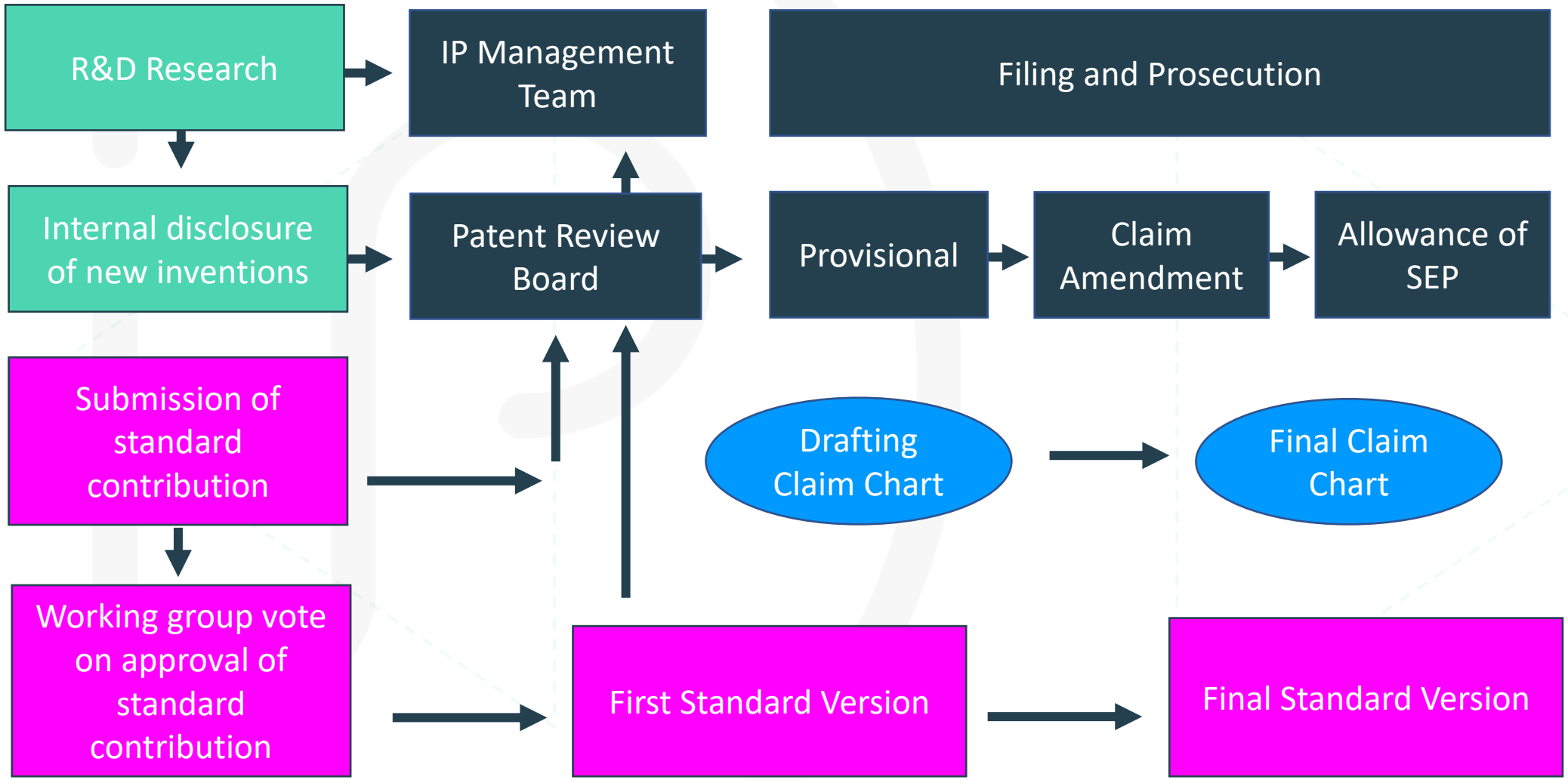
SEP filing process 4/7



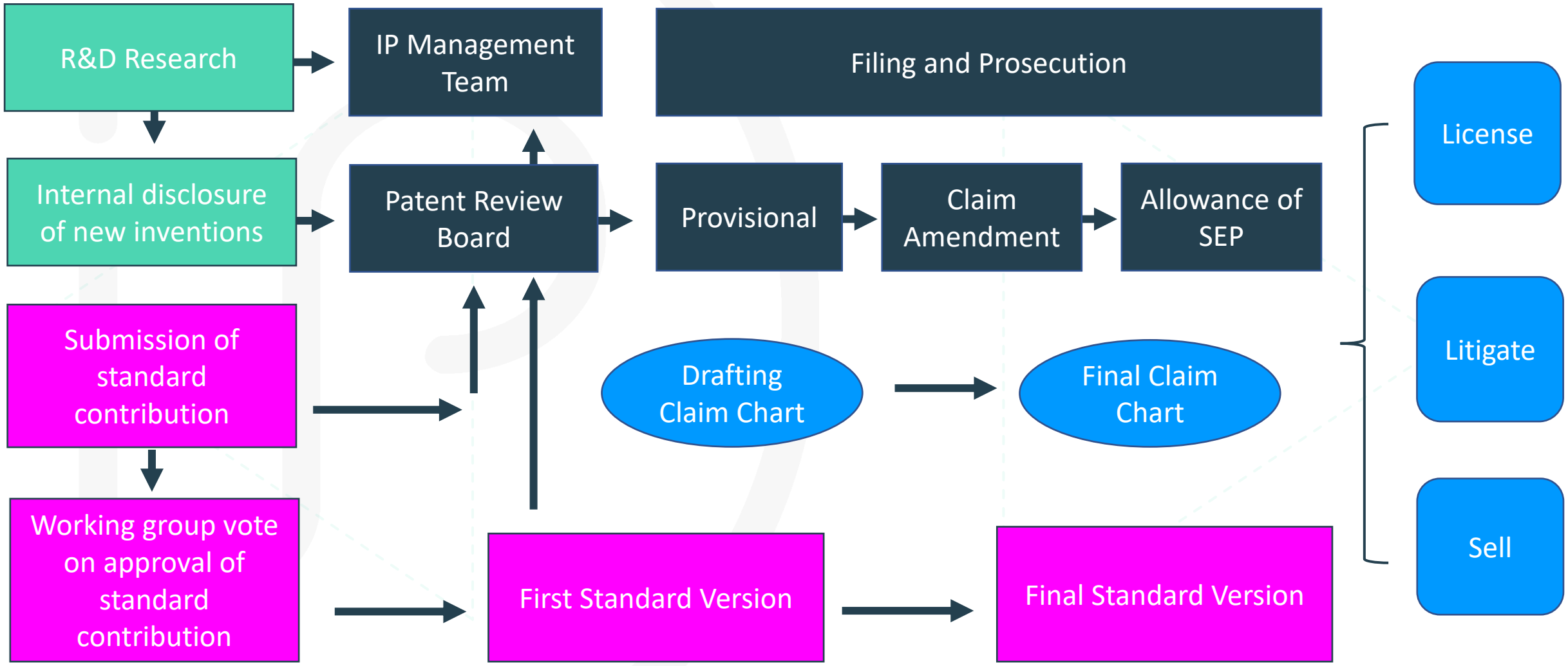
SEP filing process 5/7



SEP filing process 6/7



SEP filing process 7/7

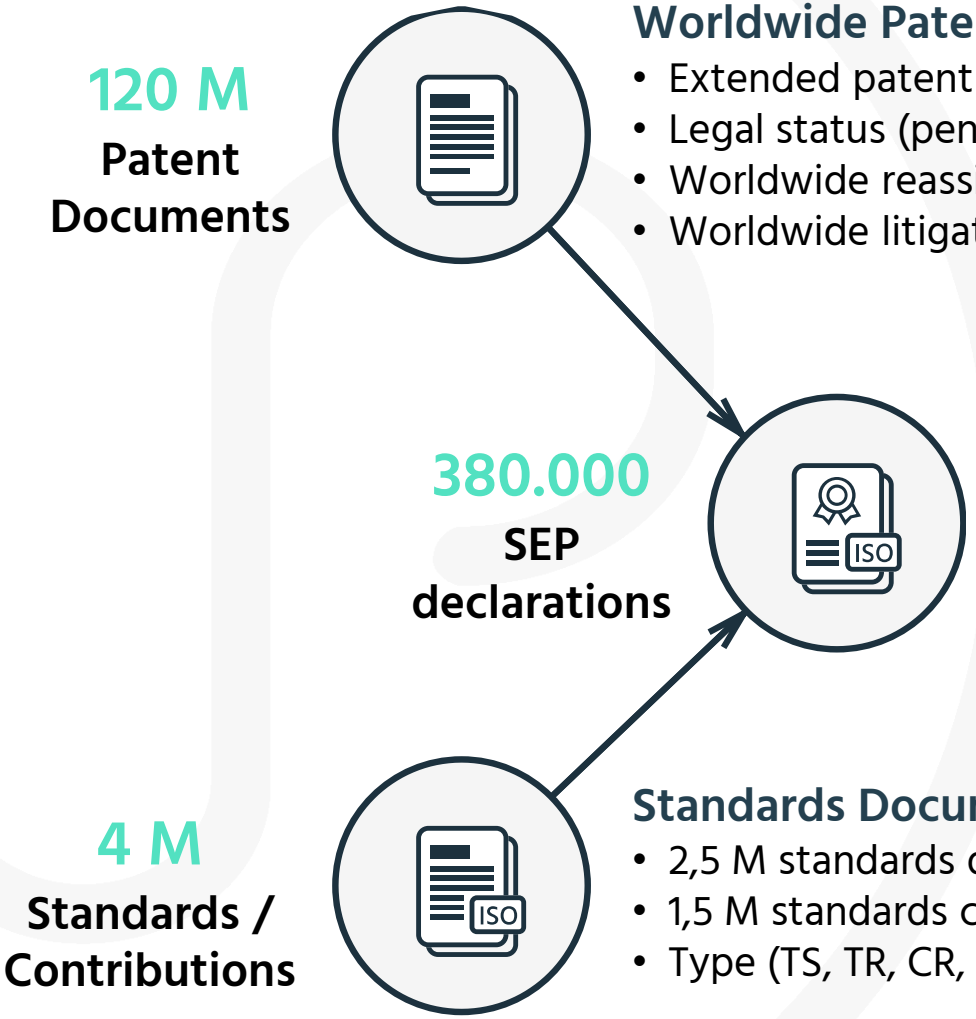


How to count and value declared SEPs and standards contribution

Patent counting can be misleading

- Patent data, SEP declaration data and even standards data is publicly available!
- However, the **disconnect** among patent data, SEP data and standards data sources as well as the **quality of the raw data** is insufficient for decision making.
- **Declared SEPs lack information** on both the **patent legal status, current ownership or patent families** as well as information about the standards, e.g. the **technology generation, the release** and underlying technology use case (e.g. user equipment vs. network).
  - Not all declared patent are essential!
  - Not all essential patent are declared!
  - **SEPs** – as any other patent – **differ in value** (core technologies vs. marginal improvements)

IPlytics Data Source



Worldwide Patents (USA, Europe, Korea, Japan, China, etc.)

- Extended patent families
- Legal status (pending/granted, lapsed/revoked/active/expired)
- Worldwide reassignment information
- Worldwide litigation information

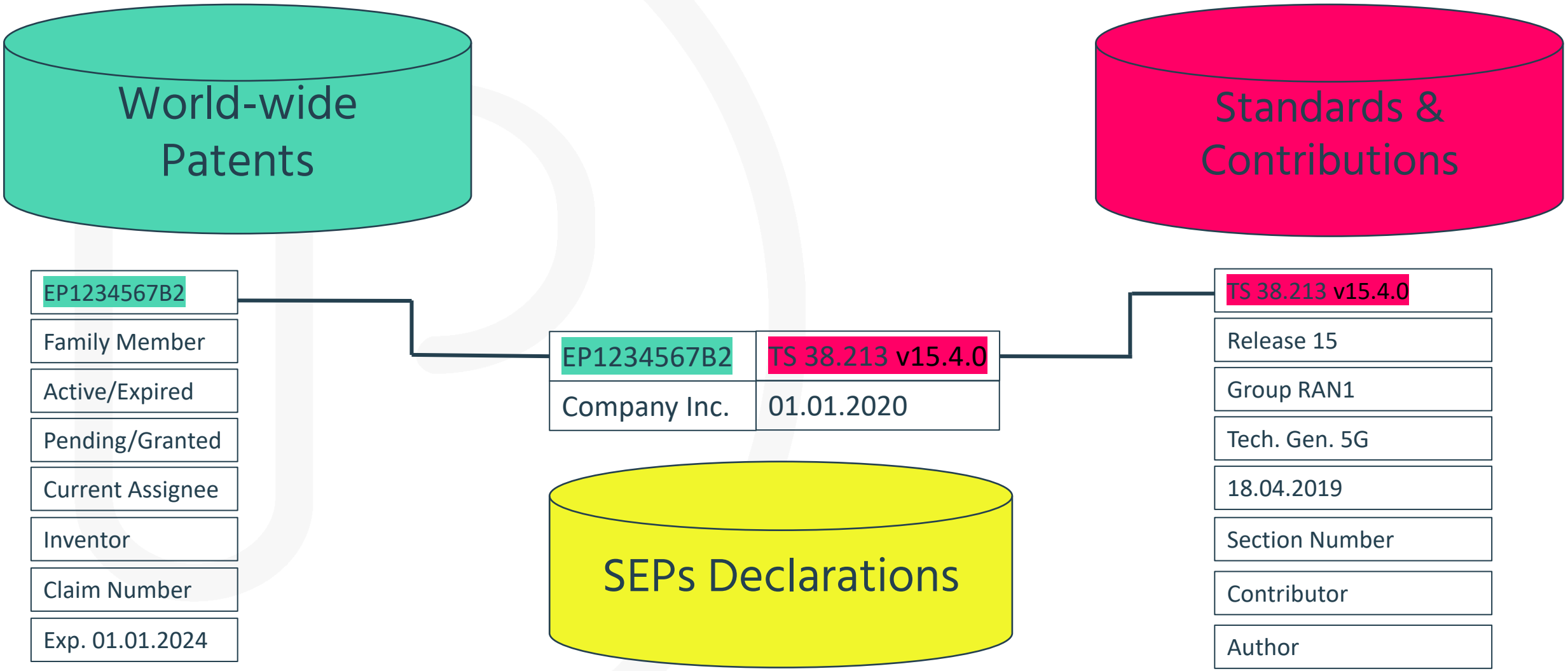
Declared Patents

- 25 SDOs and 11 patent pools
- Patent and standards document ID
- Licensing commitments (e.g. FRAND, reciprocity)
- Patent Pools

Standards Documents

- 2,5 M standards documents (Full text, author, supporting company)
- 1,5 M standards contributions (Full text, author, contributing company)
- Type (TS, TR, CR, WI), Status (revised, agreed, approved, noted)

Data Sources



IPlytics Platform

Access multiple data sources on One Platform

Patents

Patents are a window into technology competition and legal risks.

SEPs

SEPs provide ownership information of essential assets for standards.

Standards Contribution

Standards contributions show companies' technology investments in standards.

Litigation Cases

Litigation cases indicate market disputes on patented technology.

Patent Pools

Patent pools provide information about access to SEP protected technology.

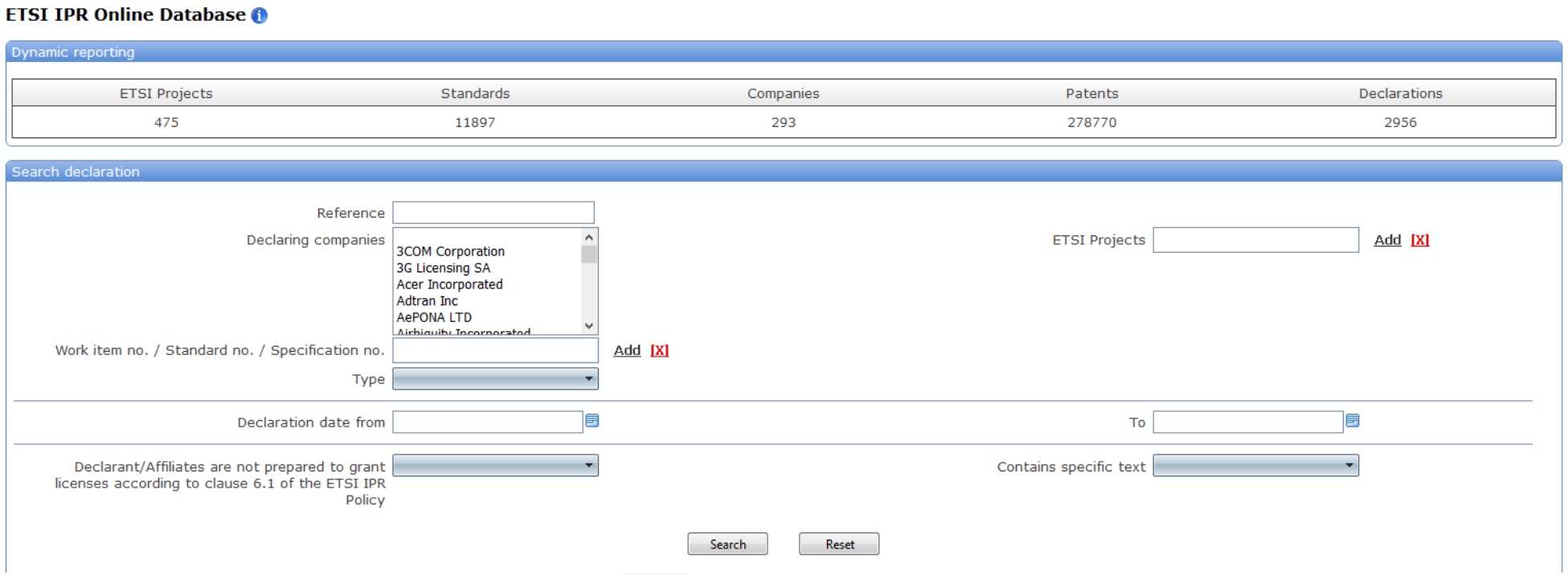
How to identify and search 5G patent declarations?

Identification of 5G patents

- Patent declarations can be classified as 5G relevant if the **TS number and version** can be identified as 5G at the **3GPP database**.
- Patent declarations can be classified as 5G subject to TS that relate to several standard generations, **bridging technology** of 4G and 5G or even 3G and 5G.
- Since patent applications and patents across standard generations can be essential, patent declarations **previously declared** for 2G, 3G or 4G and now again declared for 5G should also be considered.

ETSI IPR

- All patent declarations are **submitted to ETSI** but not declared to a standard generation but a **TS (Technical Specification)**



5G Standard specifications defined by 3GPP

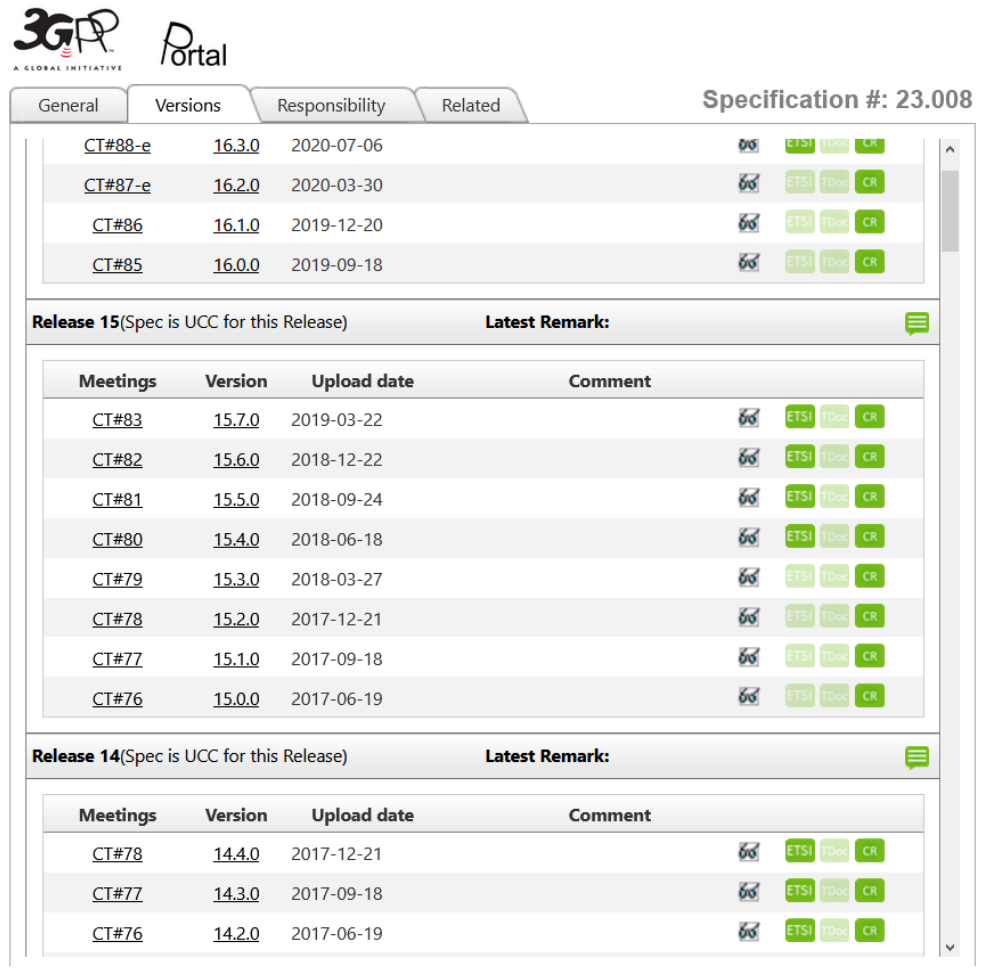
Specification Number	Type	Title	Status	Primary Responsible Group	
33.122	TS	Security aspects of Common API Framework (CAPIF) for 3GPP northbound APIs	Under change control	S3	CR
33.126	TS	Lawful Interception requirements	Under change control	S3	2g 3g CR
33.220	TS	Generic Authentication Architecture (GAA); Generic Bootstrapping Architecture (GBA)	Under change control	S3	2g 3g CR
37.460	TS	Iuant interface: General aspects and principles	Under change control	R3	3g CR
37.470	TS	W1 general aspects and principles	Draft	R3	
38.101-4	TS	NR; User Equipment (UE) radio transmission and reception; Part 4: Performance requirements	Under change control	R4	CR
38.124	TS	NR; Electromagnetic compatibility (EMC) requirements for mobile terminals and ancillary equipment	Under change control	R4	CR
38.133	TS	NR; Requirements for support of radio resource management	Under change control	R4	CR
38.171	TS	NR; Requirements for support of Assisted Global Navigation Satellite System (A-GNSS)	Under change control	R4	CR

5G Standard specifications defined by 3GPP

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

5G
(Release 15 & 16)

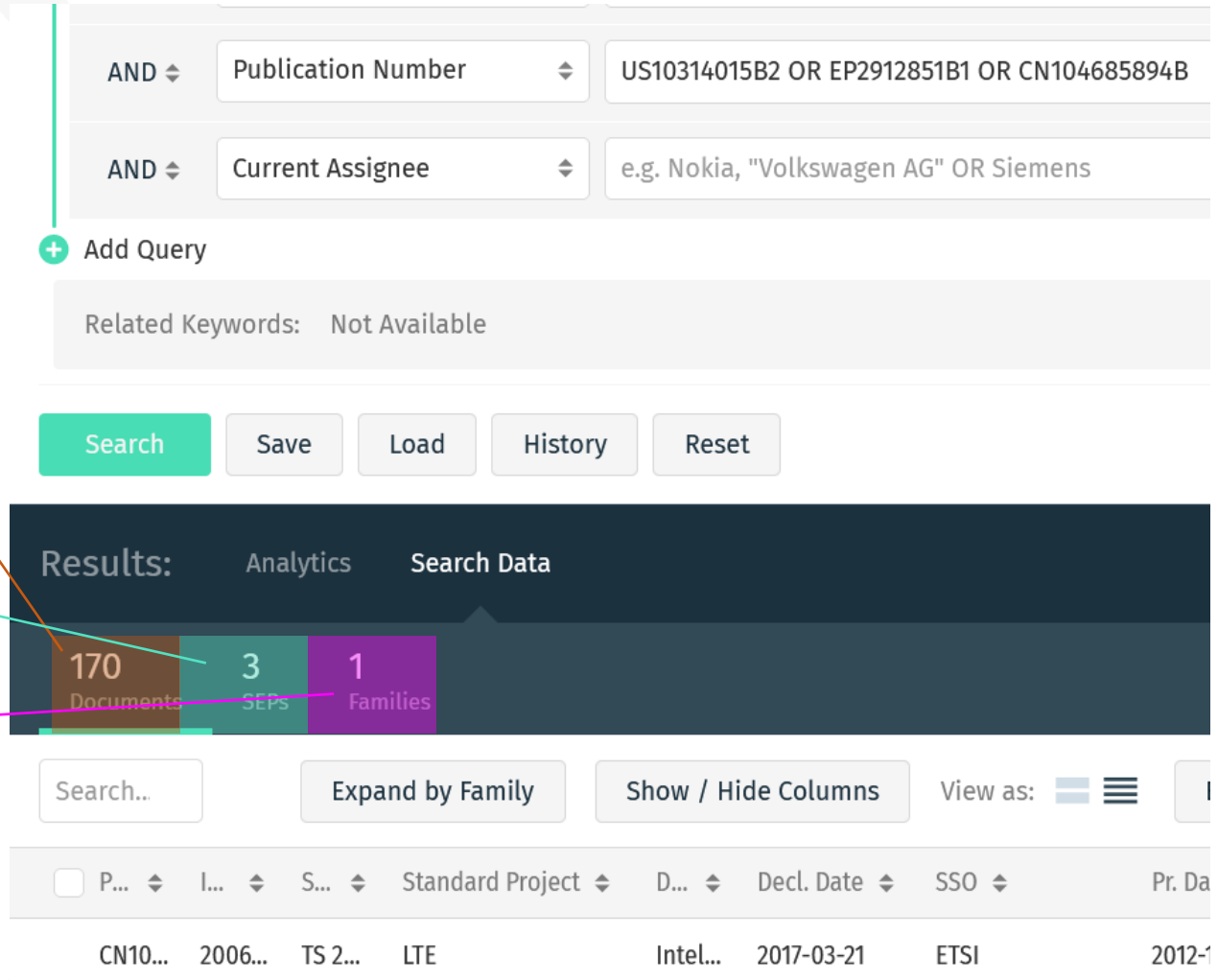
4G
(Release 13 & 14)



Distinct family counting

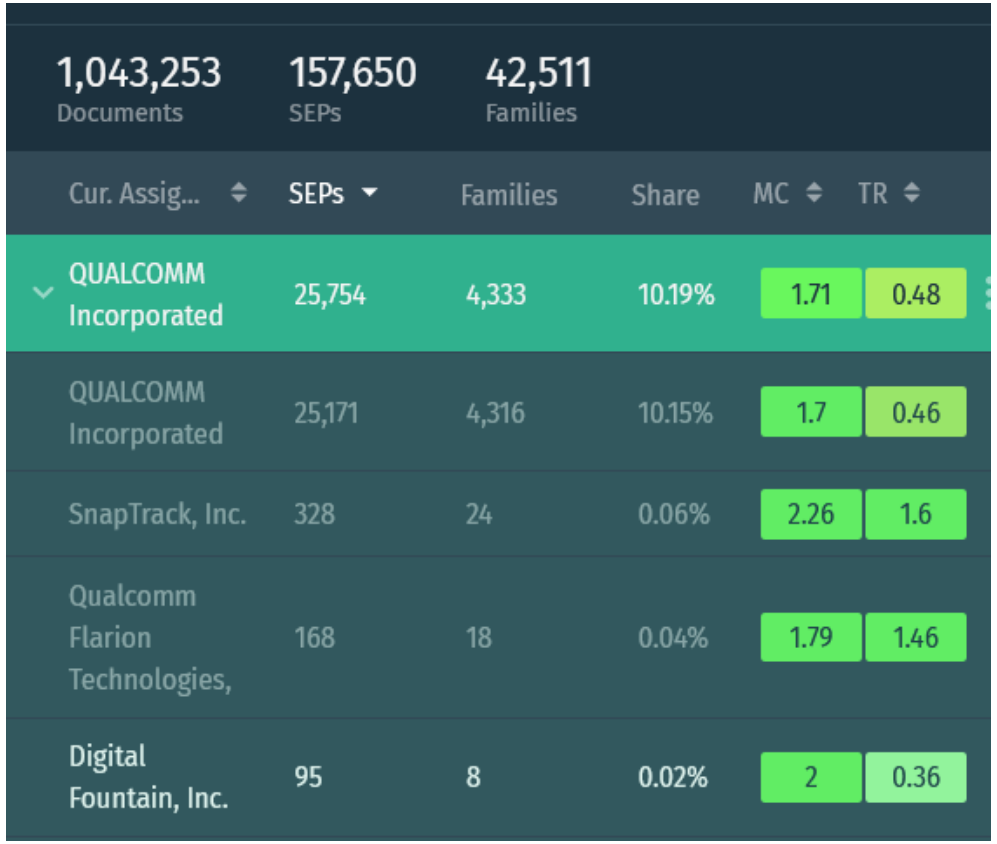
Identification of 5G patents

- Unique combination of TS and patent (serial application ID)
- Unique number of patents (serial application ID)
- Unique number of families (INPADOC ID)



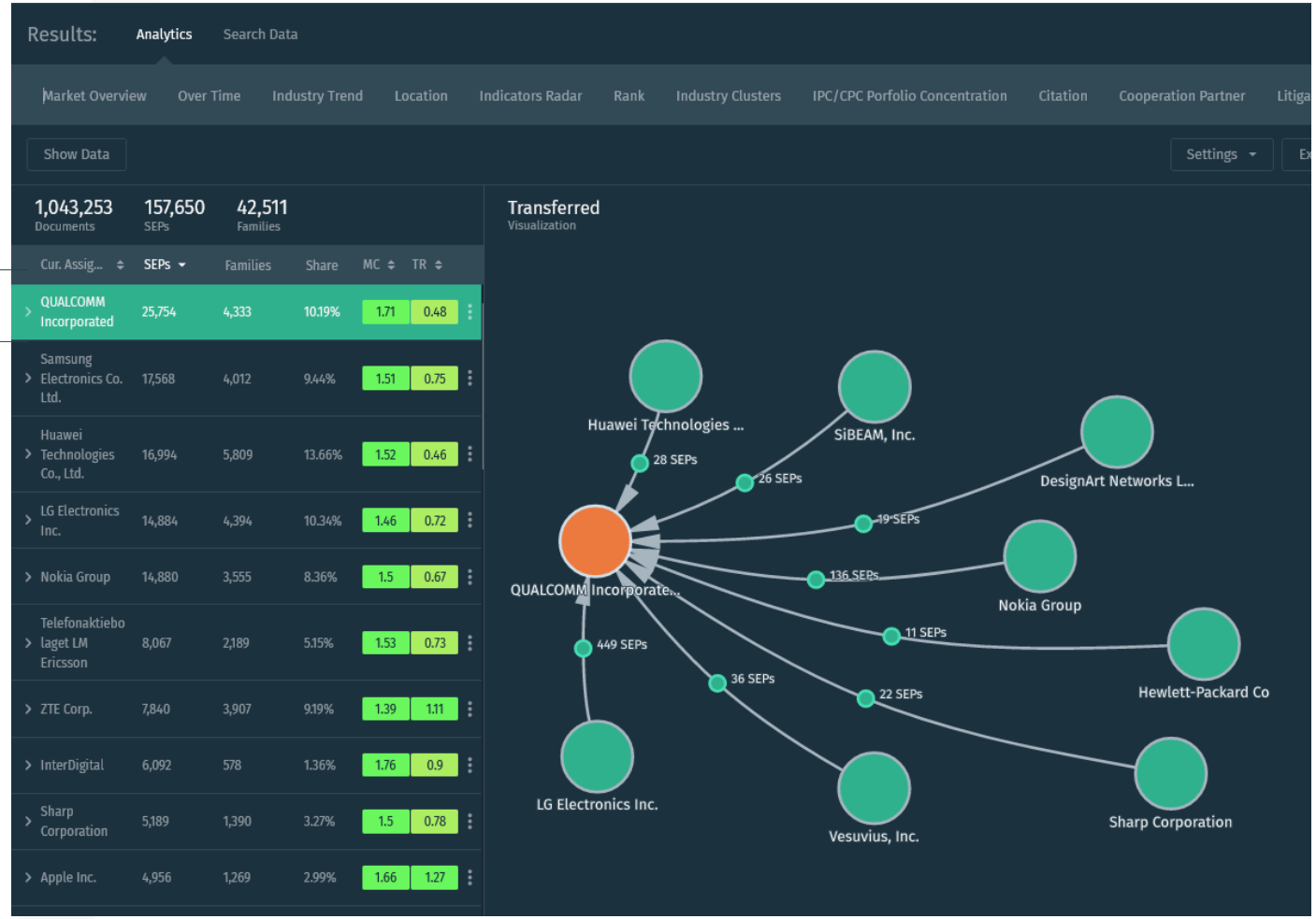
Corporate Tree Data

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



Latest assignee data

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



How to identify and search standards contributions?

A matter of timing

Patent application

18 months until public

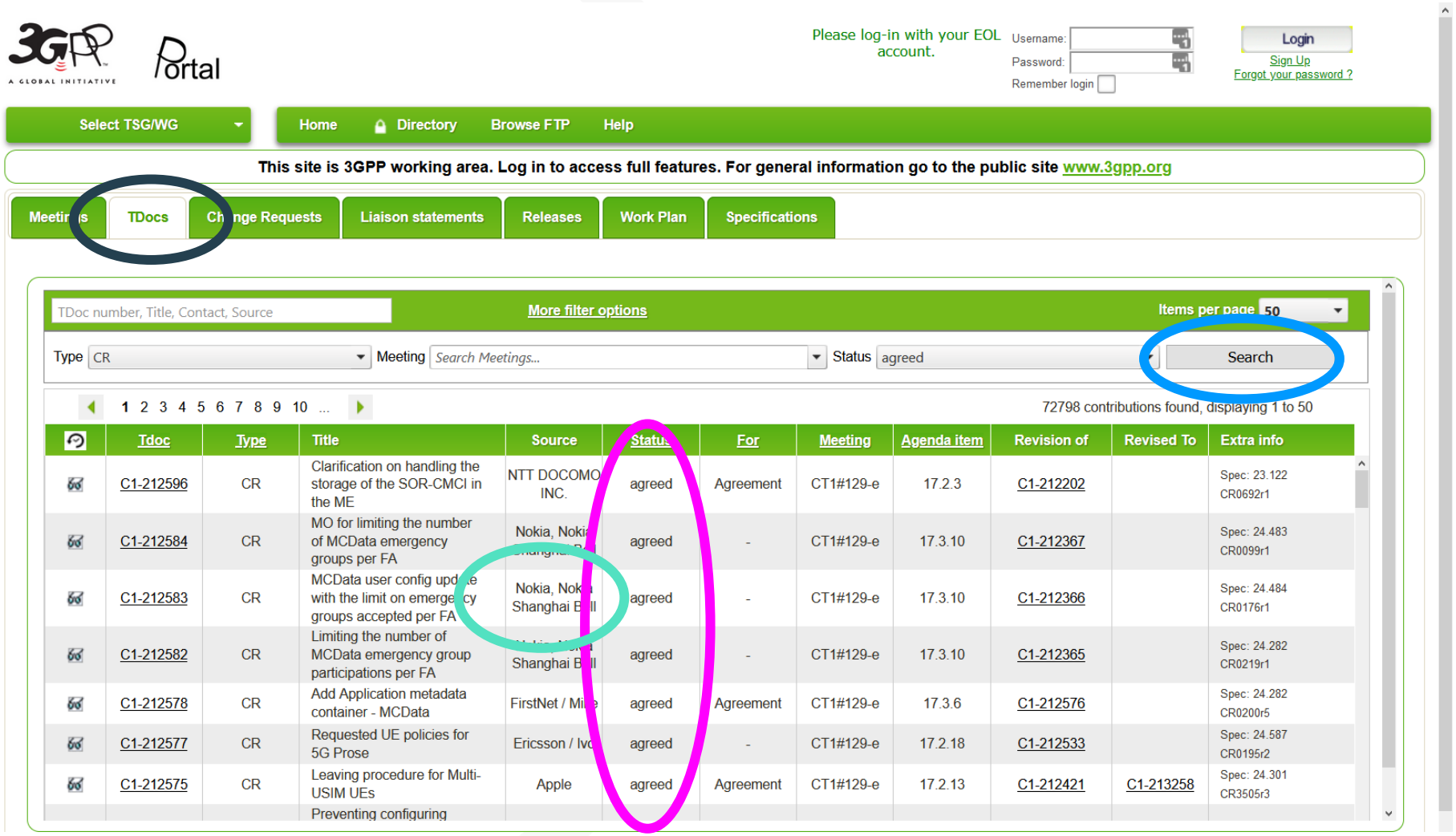
On average 32 months until granted

*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*

3GPP tracks meeting sand submissions of contributions



Tdoc	Type	Title	Source	Status	For	Meeting	Agenda item	Revision of	Revised To	Extra info
C1-212596	CR	Clarification on handling the storage of the SOR-CMCI in the ME	NTT DOCOMO INC.	agreed	Agreement	CT1#129-e	17.2.3	C1-212202		Spec: 23.122 CR0692r1
C1-212584	CR	MO for limiting the number of MCData emergency groups per FA	Nokia, Nokia	agreed	-	CT1#129-e	17.3.10	C1-212367		Spec: 24.483 CR0099r1
C1-212583	CR	MCData user config update with the limit on emergency groups accepted per FA	Nokia, Nokia Shanghai Bell	agreed	-	CT1#129-e	17.3.10	C1-212366		Spec: 24.484 CR0176r1
C1-212582	CR	Limiting the number of MCData emergency group participations per FA	Nokia, Nokia Shanghai Bell	agreed	-	CT1#129-e	17.3.10	C1-212365		Spec: 24.282 CR0219r1
C1-212578	CR	Add Application metadata container - MCData	FirstNet / Mi	agreed	Agreement	CT1#129-e	17.3.6	C1-212576		Spec: 24.282 CR0200r5
C1-212577	CR	Requested UE policies for 5G Prose	Ericsson / Ivo	agreed	-	CT1#129-e	17.2.18	C1-212533		Spec: 24.587 CR0195r2
C1-212575	CR	Leaving procedure for Multi-USIM UEs	Apple	agreed	Agreement	CT1#129-e	17.2.13	C1-212421	C1-213258	Spec: 24.301 CR3505r3
		Preventing configuring								

3GPP tracks meetings and submissions of contributions

Title:	⌘	Clarification on the registered PLMN for Network Sharing supporting UEs in a shared network
Source:	⌘	TeliaSonera
Work item code:	⌘	NTShar
Date:	⌘	16/07/2004
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one of the following categories:
- ***F*** *(correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(addition of feature)*
- ***C*** *(functional modification of feature)*
- ***D*** *(editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

Ph2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Refine standards contributions to accurately count

Contributions differ by:

- Type (work item, change request, input/output document, draft etc.)
- Category (addition of feature, correction, editorial modif., functional modif.)
- Status (e.g. agreed, approved, incorporated, noted, rejected etc.)

Contributions differ by:

- Generation (3G / 4G / 5G)
- Group (RAN 1 / RAN 2 / SA 1 / SA2 / CT1)
- Release (e.g. Release 12, 13, 14, 15, 16)

Contributing company:

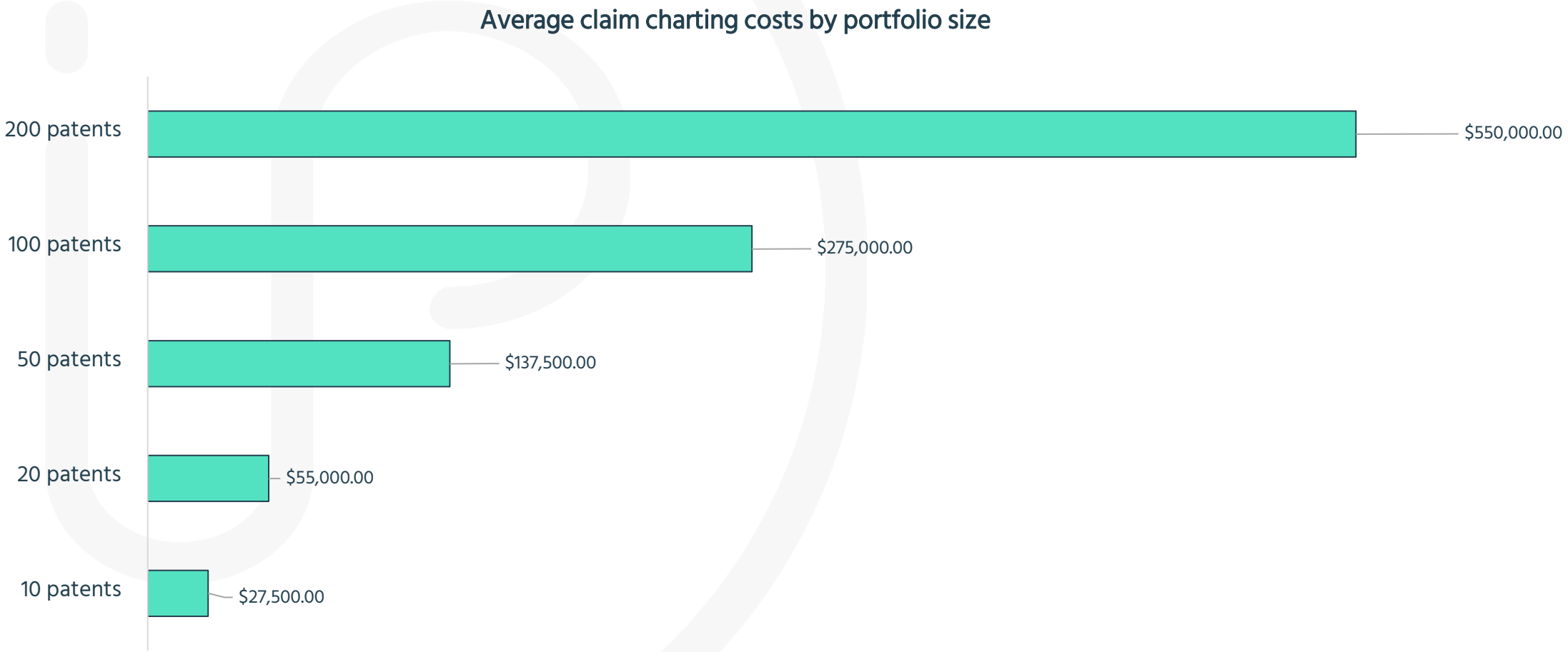
- First/ Supporting contributing company

The cost of SEP determination

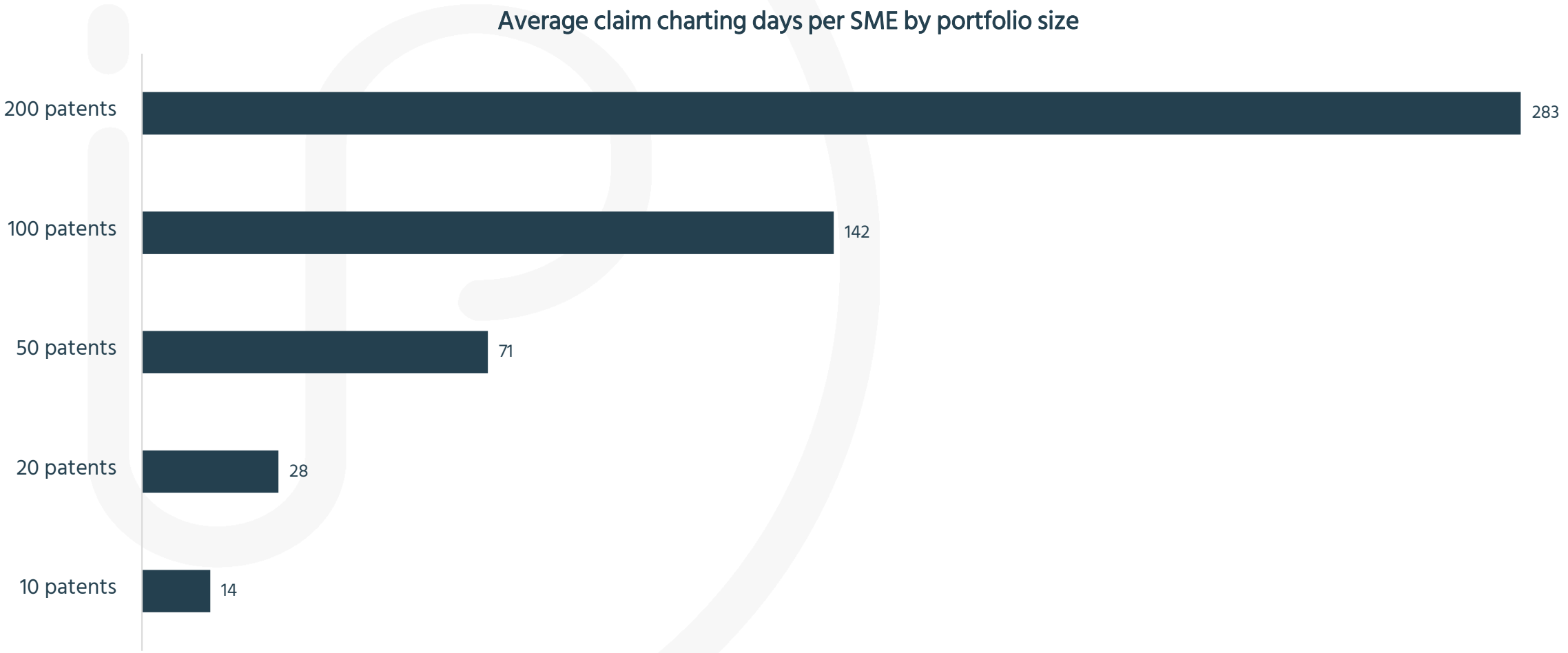
SSO declaration practice: **"maximal declaration"** situation

- 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)*

Claim charting **costs**



Claim charting **time**



SEP determination is a challenge

- **Over-declaration** – SSO's do not police declarations, their quality or essentiality. They document FRAND obligation only.
- Understanding whether a patent is essential or not is **expensive** requiring:
  → **SME review, claim charting, attorney legal opinion and review**
- **Slow manual human processes** - Legal teams and SMEs are limited resources inside organizations that should be used wisely where it counts.
- Claim charting a portfolio of e.g. 100 patents takes **months** and may need budgets of **$100k-$150k** for outside SME and counsel.

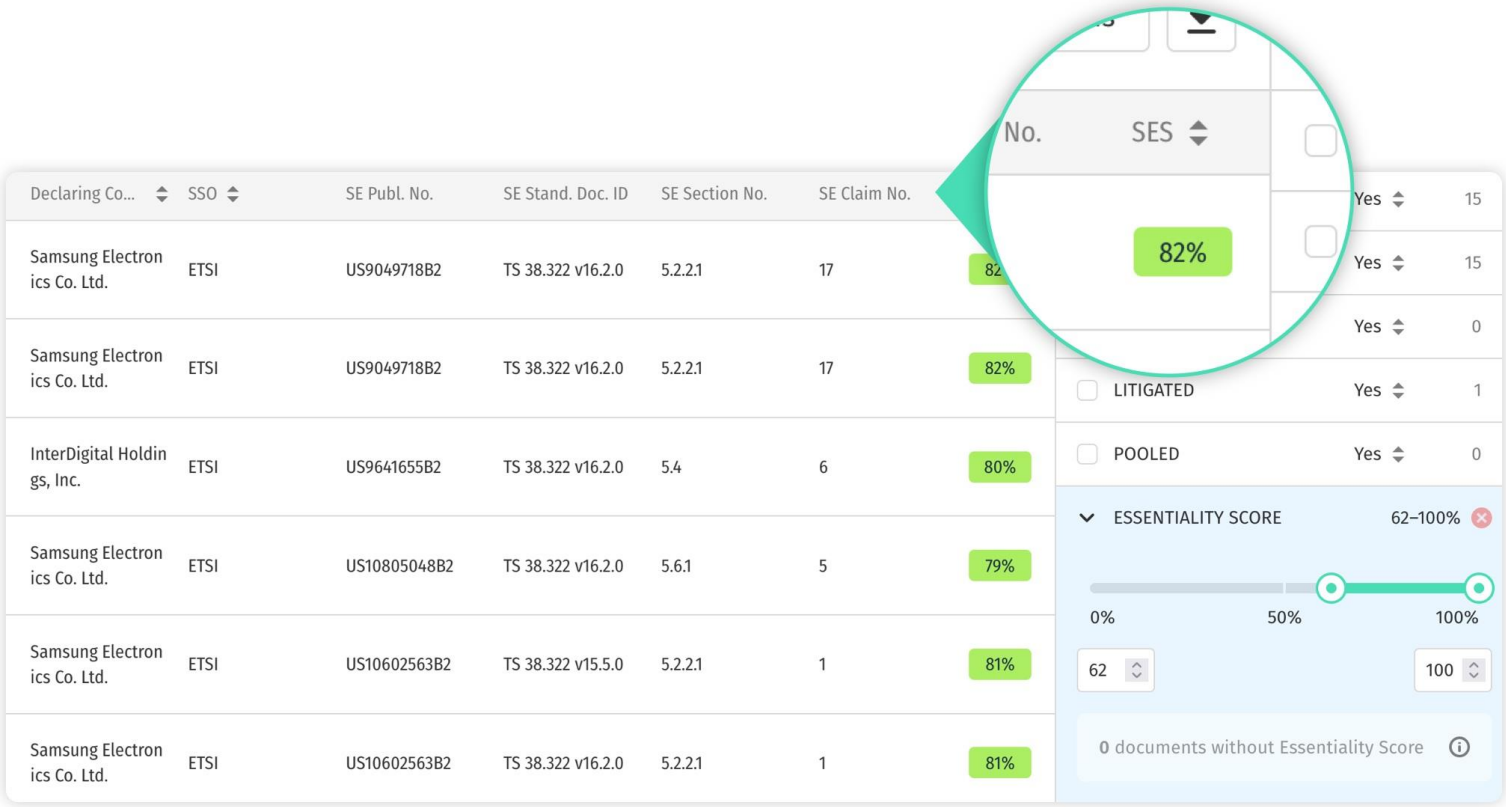
Semantic Essentiality Score

“IPlytics SES is your **first-step approach** to determine essentiality for self-declared patent portfolios before spending time and money!”

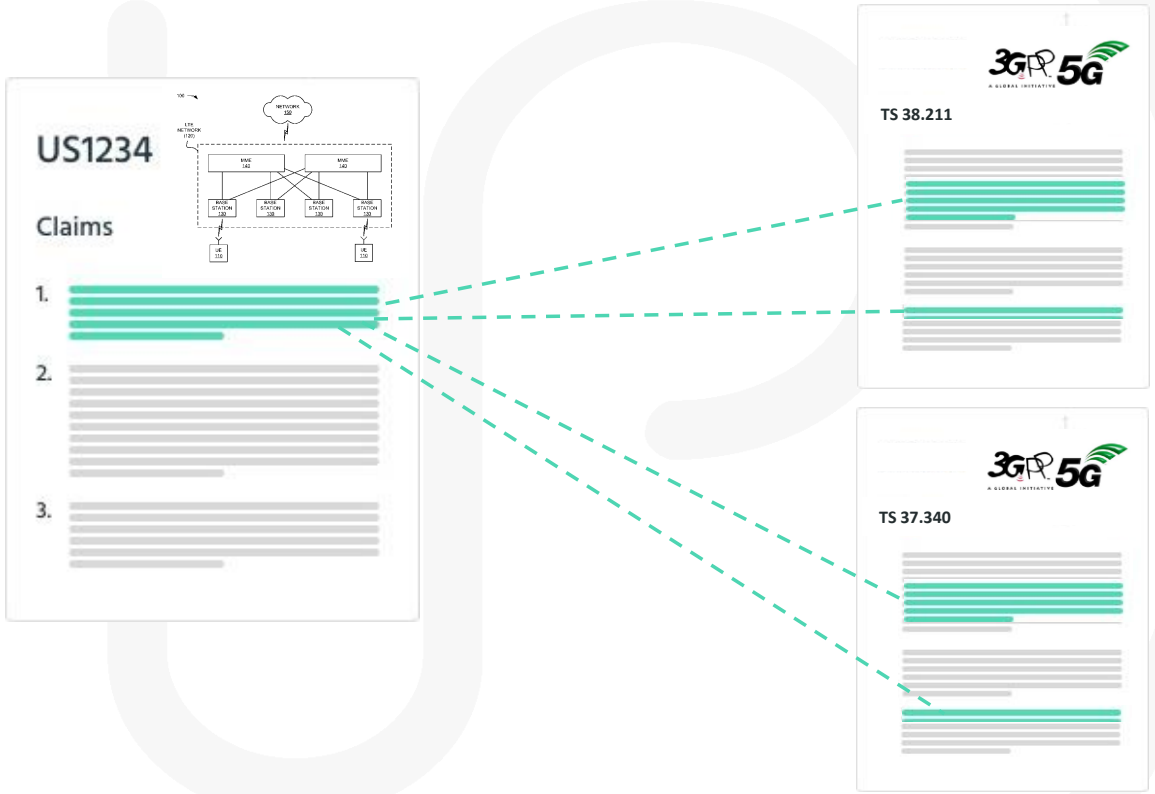
The new Semantic Essentiality Score feature

What is SES?

- SES indicates how **likely essential** a patent is to the standard to which it has been declared.
- The scoring system is from **1 to 100**, where 1 is low and 100 is high.
- SES is based on the **semantic relation** of claims and sections.

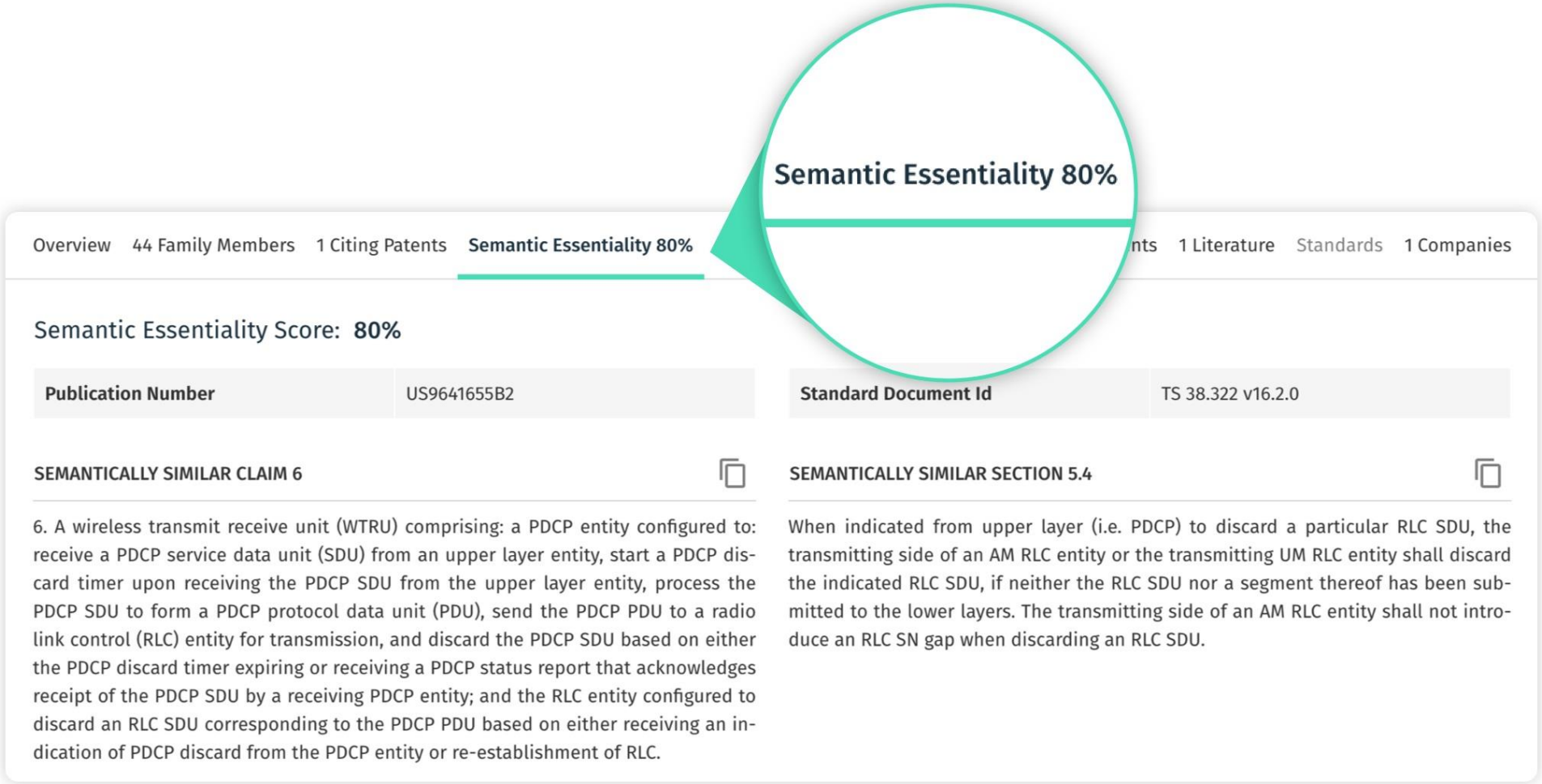


What is SES?

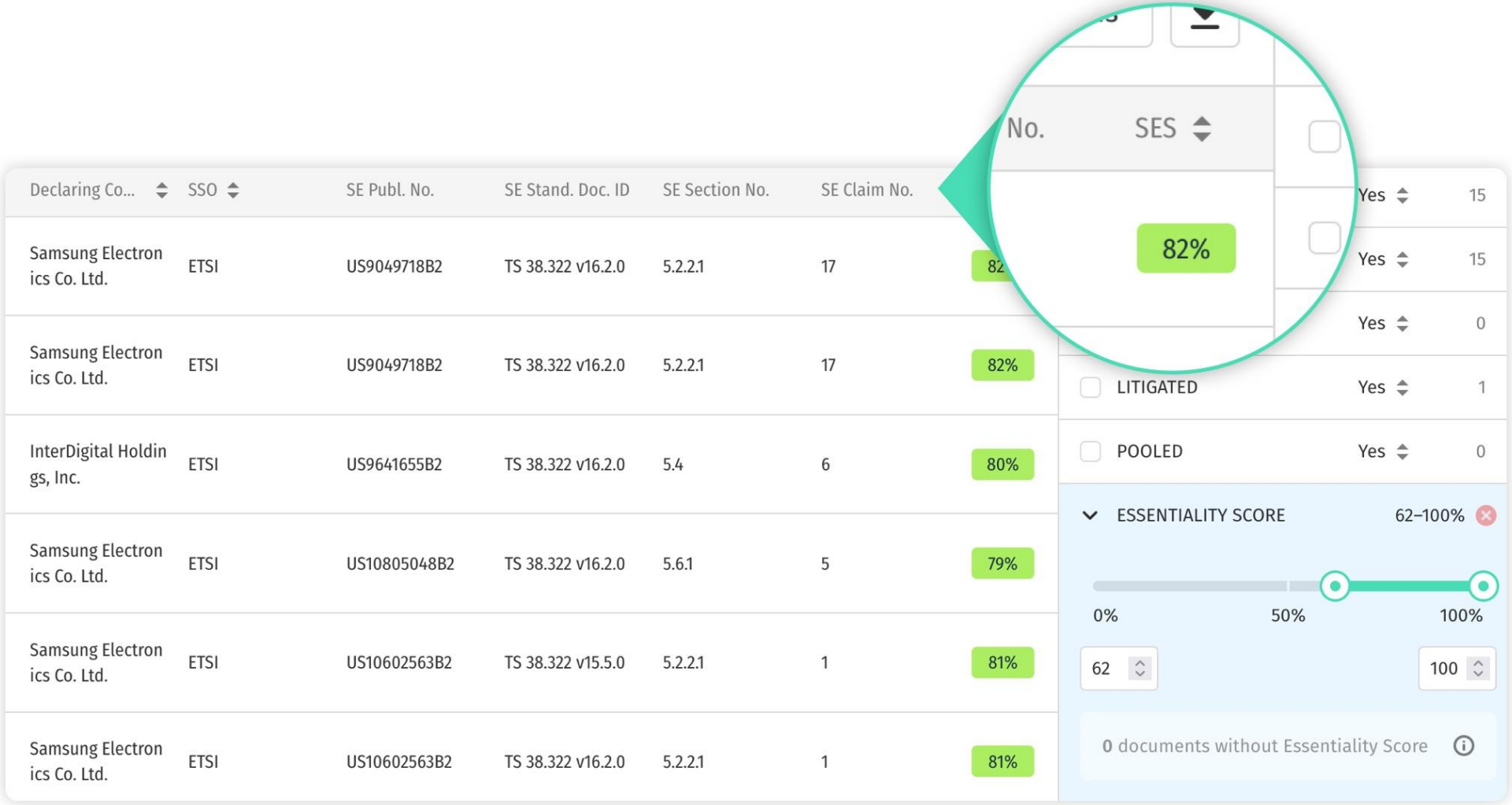


- While patent claims read on standards and thus can be mapped and charted by experts – the **actual language used in patent claims and standard sections can be very different.**
- To overcome this, we **train a semantic model based on LSI (Latent Semantic Indexing)** that relates the context of claims and standards and recognizes the use of different expressions for certain concepts to map claim elements.
- We work with **SMEs** to calibrate the algorithm and we have training data for testing the **accuracy** of the scores.

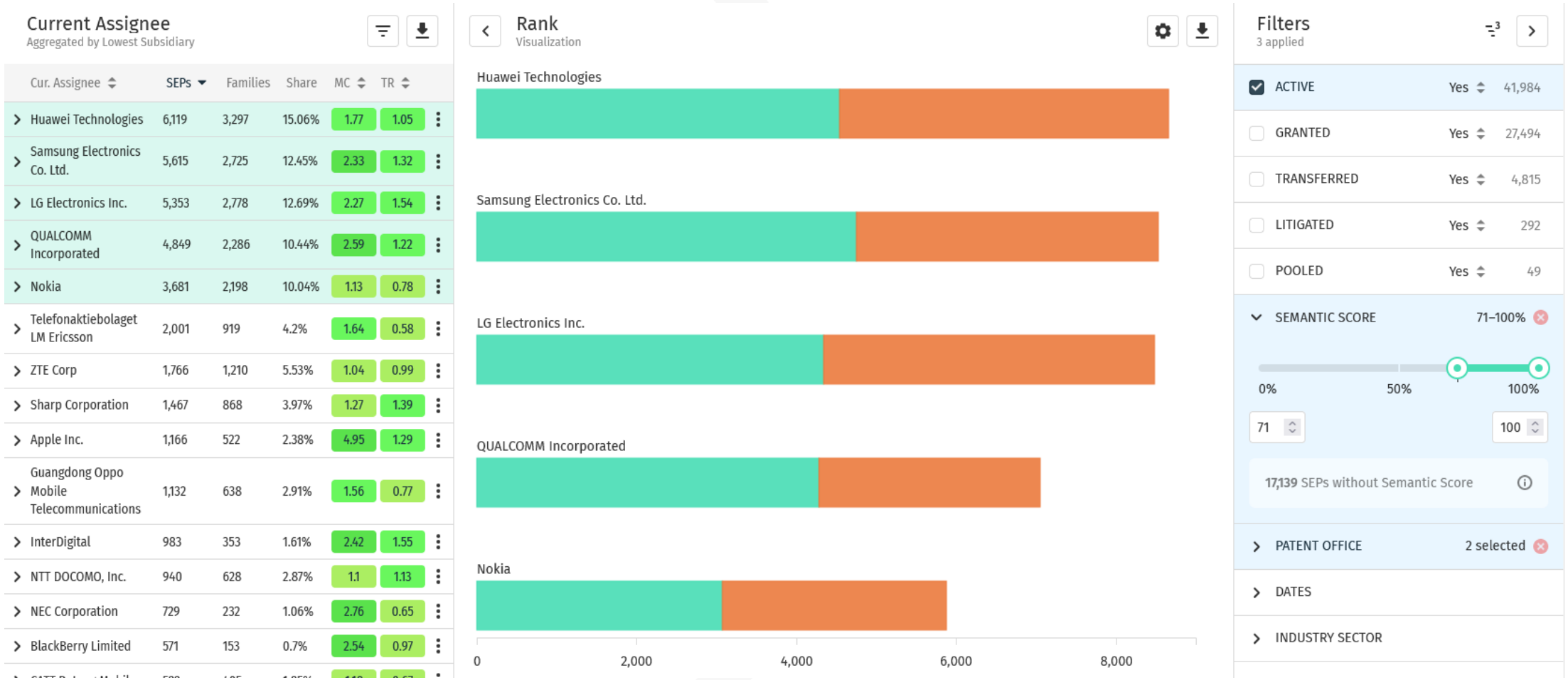
SES – Patent claim and standard section **side by side**



SES – **Sort and refine** patents as to essentiality score



SES – **Value** your and competition's **portfolios**

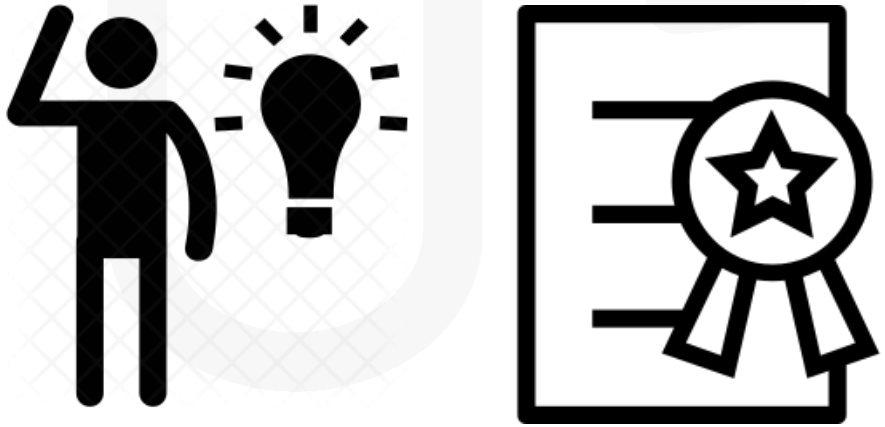


Correlating Patents and Standards Data

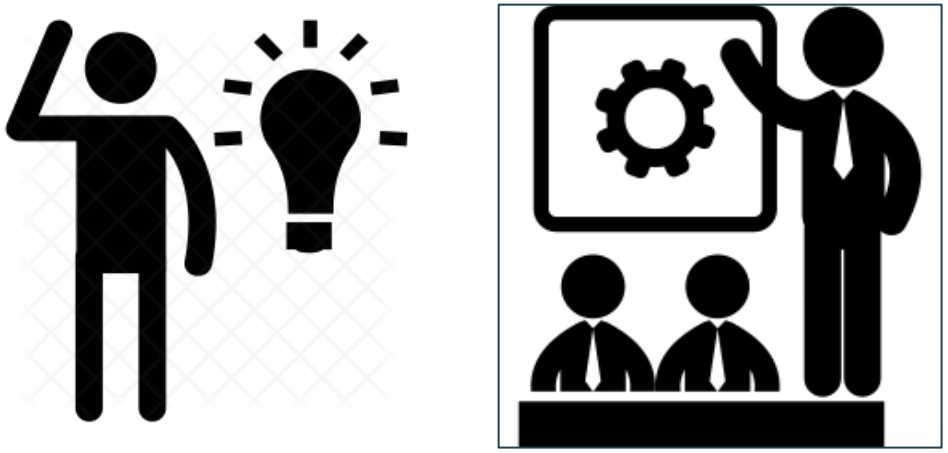
Connecting the data points

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

Correlating patents and standards – Inventor Contributor comparison

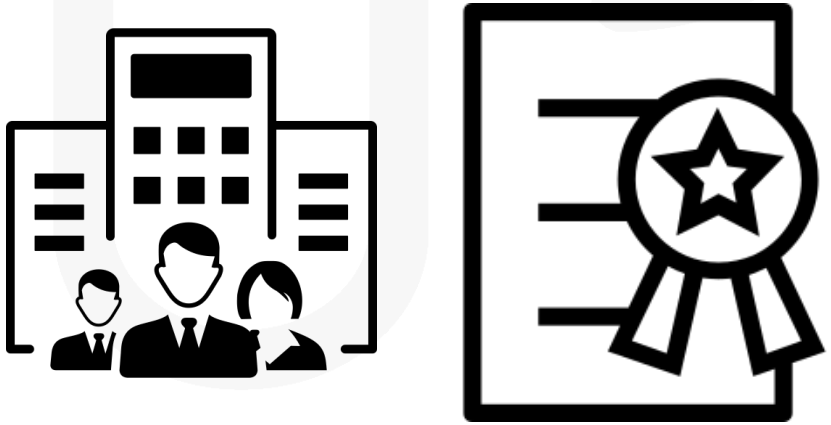
- Inventor **(Peter Brown, Company Inc.)**
- US1234567B1 declared to **TS 38.473** - **RAN3**

- Author **(Peter Brown, Company Inc.)**
- Author of contribution for **TS 38.473**

Connecting the data points

Correlating patents and standards – First Applicant Contributor comparison

- First applicant **(Company Inc.)**
- US1234567B1 declared to **TS 38.473** - **RAN3**

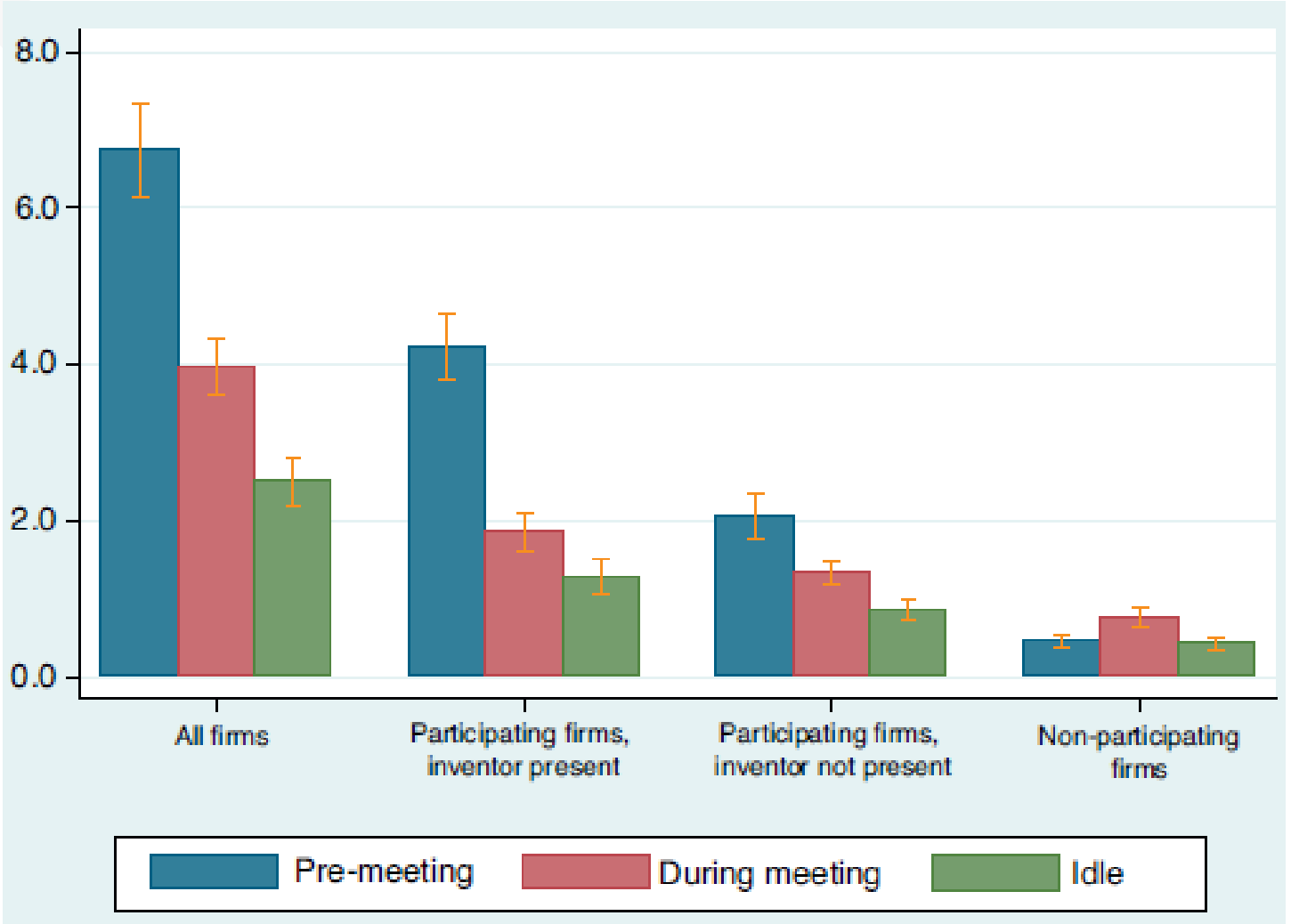


- Contributor **(Company Inc.)**
- Submitted **accepted and approved** contribution for **TS 38.473** at **RAN3** meeting

Just in Time Patents?

Kang et al. (2015) findings:

- Average number of patent applications of later declared patents (as to filing date) per week in relation to **meeting occurrence**.
- Finding:
  - **Patent intensity in the pre-meeting periods** is much (2.6 times) higher than that in the idle period between the meetings.
  - Effect is highest for **participating firms when the inventor was present** at the meeting.

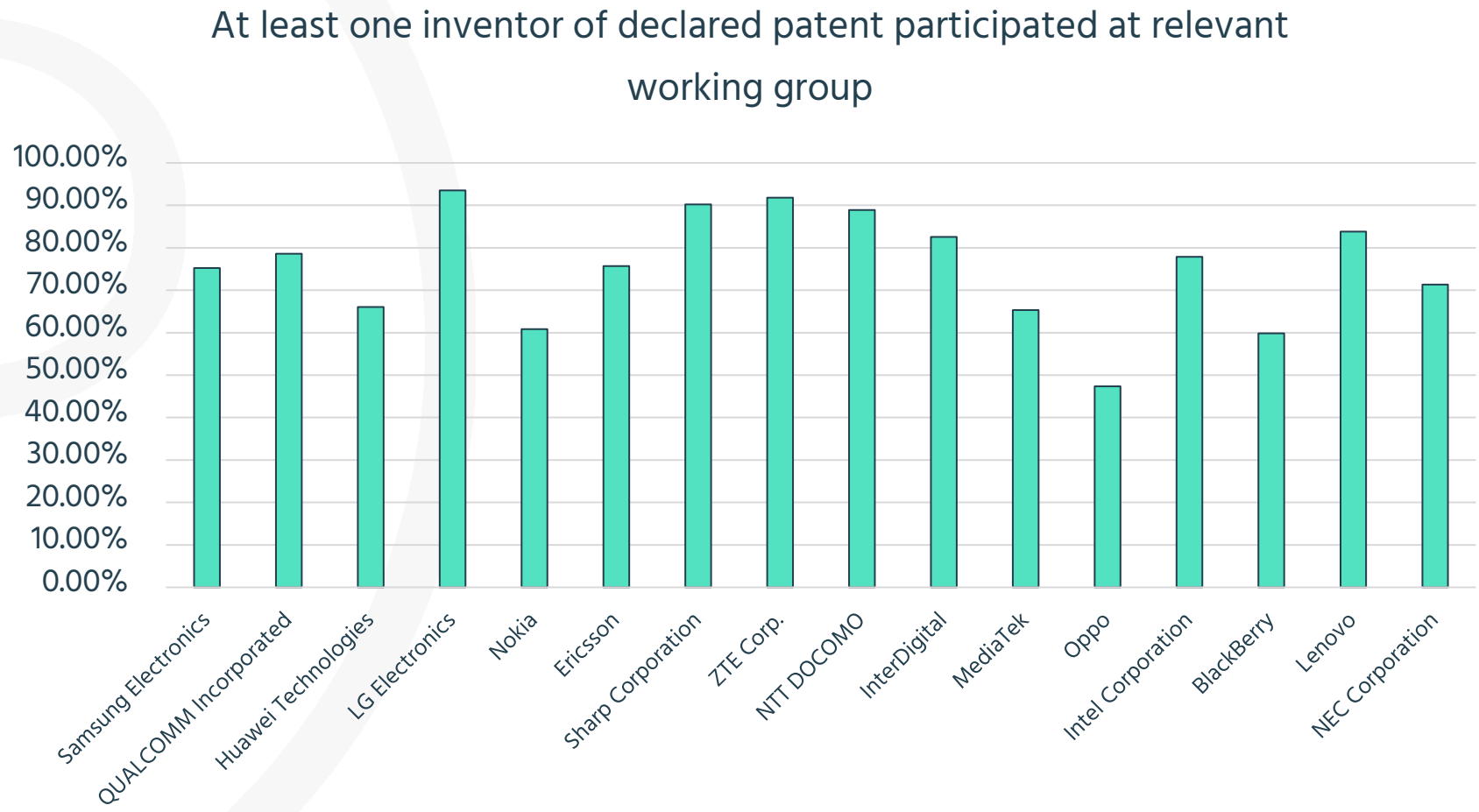


Source: Kang, Byeongwoo, and Rudi Bekkers. "Just-in-time patents and the development of standards." Research Policy 44.10 (2015): 1948-1961. Available: https://www.sciencedirect.com/science/article/abs/pii/S0048733315001146

Inventors that participate

Inventors at 3GPP:

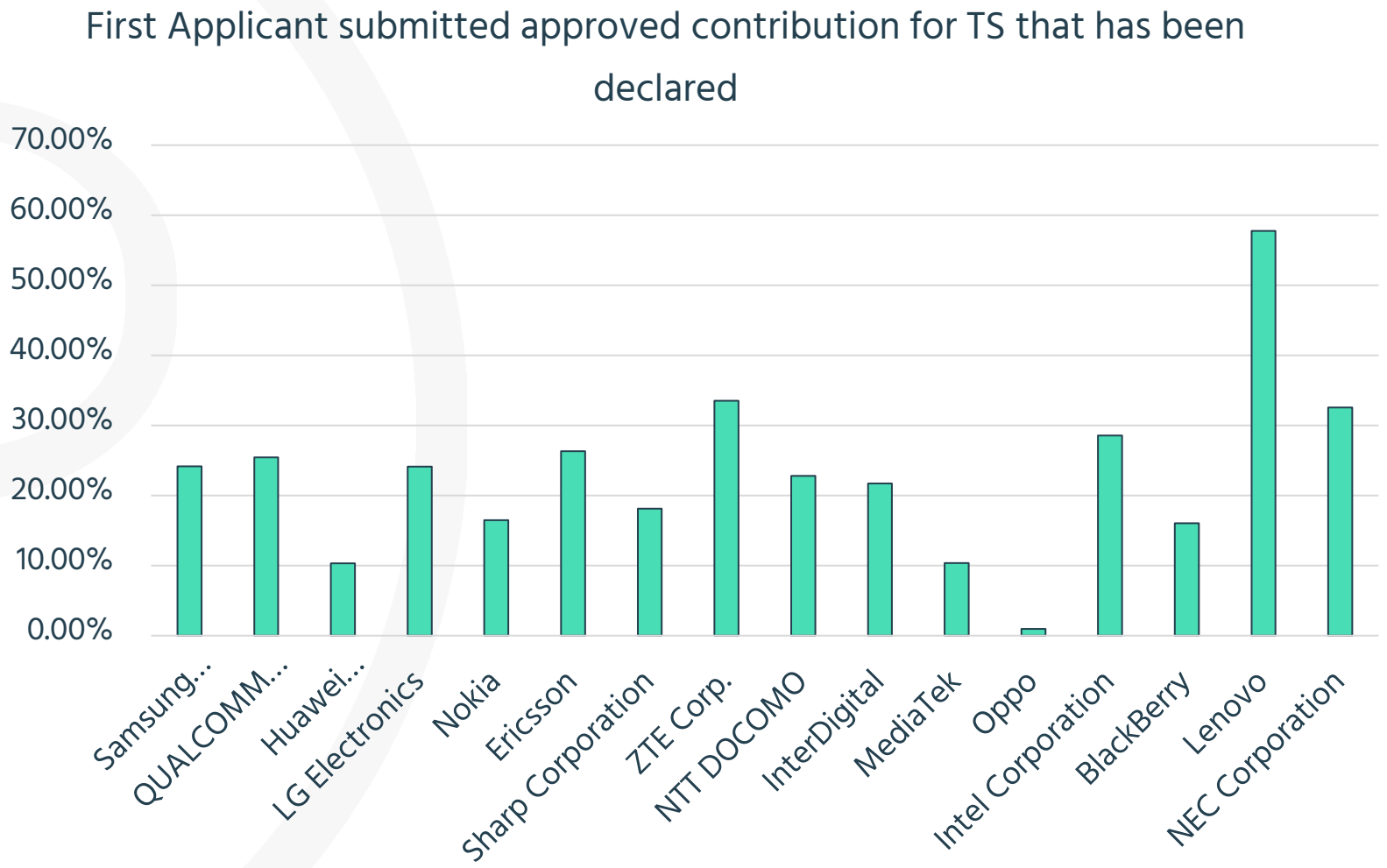
- For on average **72%** of all declared patents the **inventor** (first name, last name, entity) **participated** at the relevant 3GPP meeting where the declared TS was discussed.



First applicants that contribute

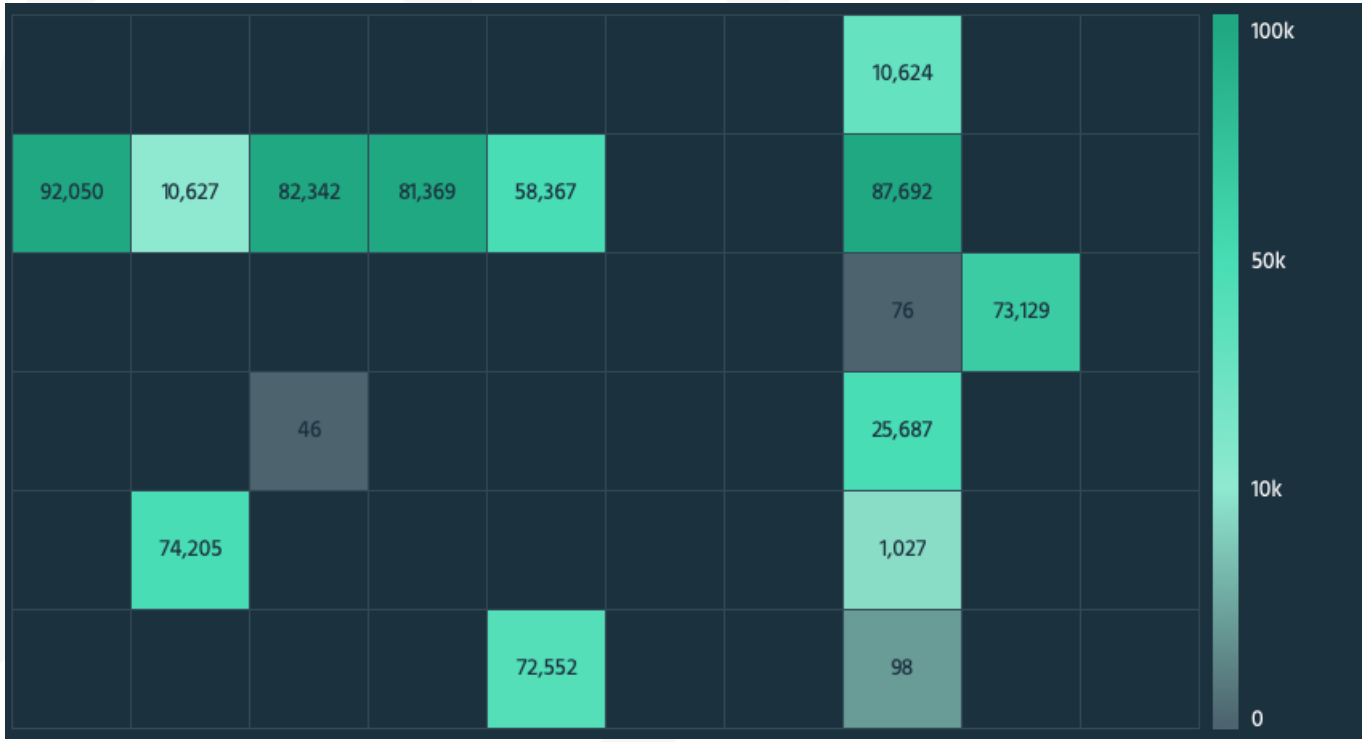
Applicants at 3GPP:

- For on average **21%** of all declared patents referenced TS the **first applicant submitted** an approved **contribution.**



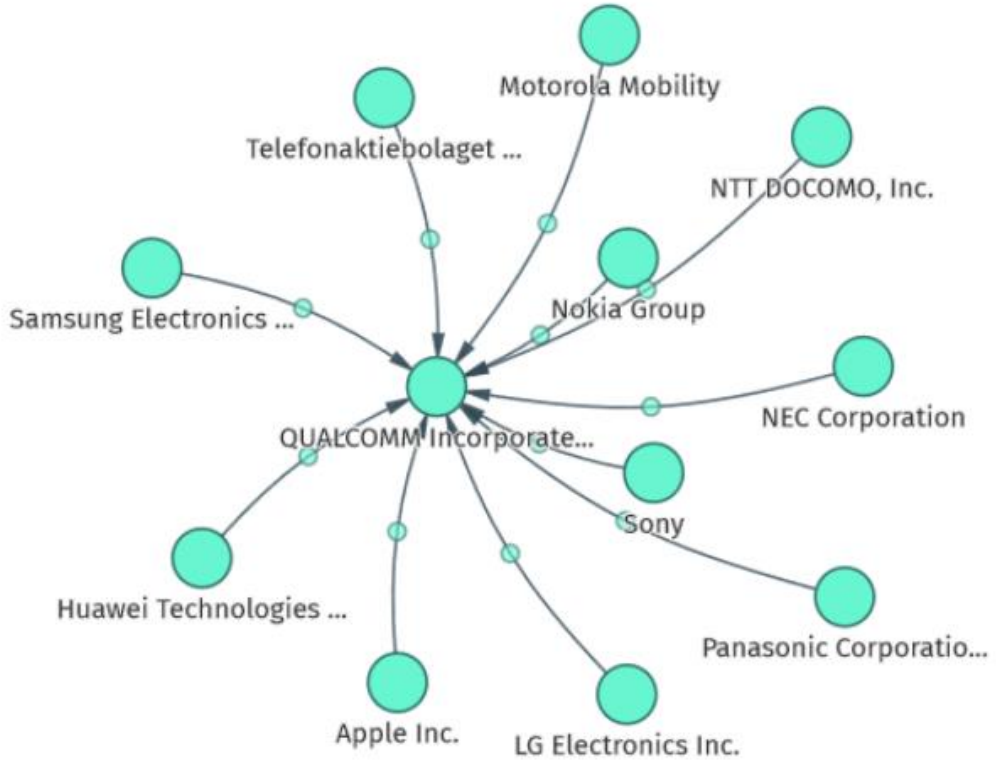
Connecting the data points

Correlating patents and standards – IPC/CPC overlap with verified SEPs



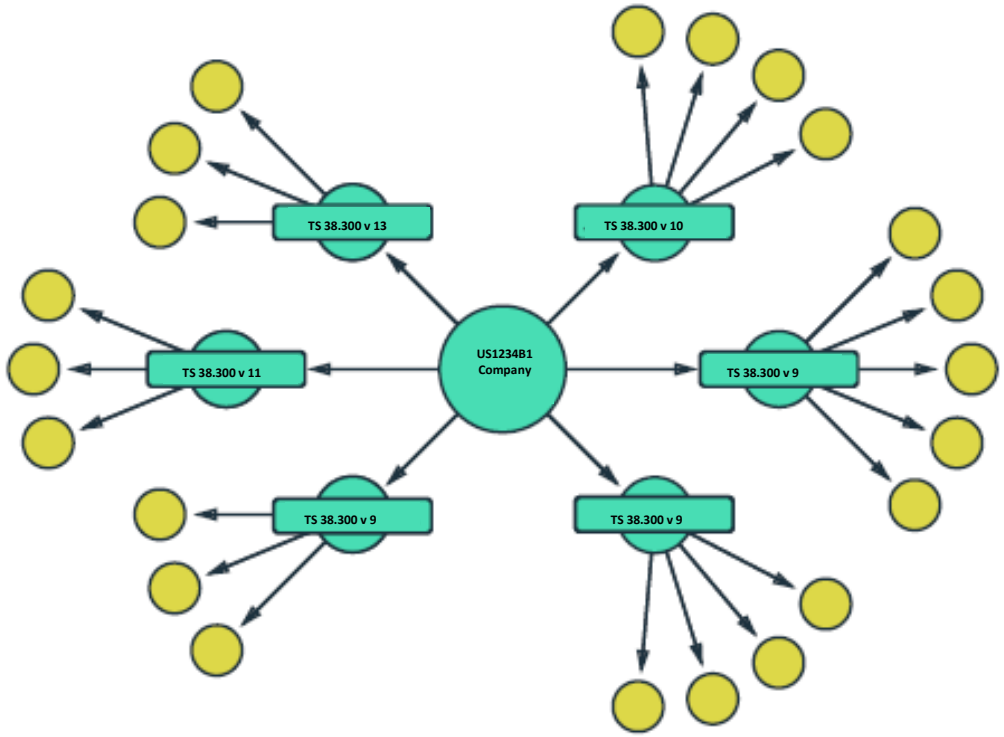
Connecting the data points

Correlating patents and standards – Patent FWD Citation by declaring companies



Connecting the data points

Correlating patents and standards – Patent NPL Citation of predecessor TS version



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.

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/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.

SES – 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.

PES – 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

R&D manger:

- Use PES for FTO analysis
- Use PES to identify white spaces
- Align standards development, invention disclosure and patent prosecution.

IPlytics Europe and US

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

https://www.iplytics.com/request-a-demo/

Or call us at:

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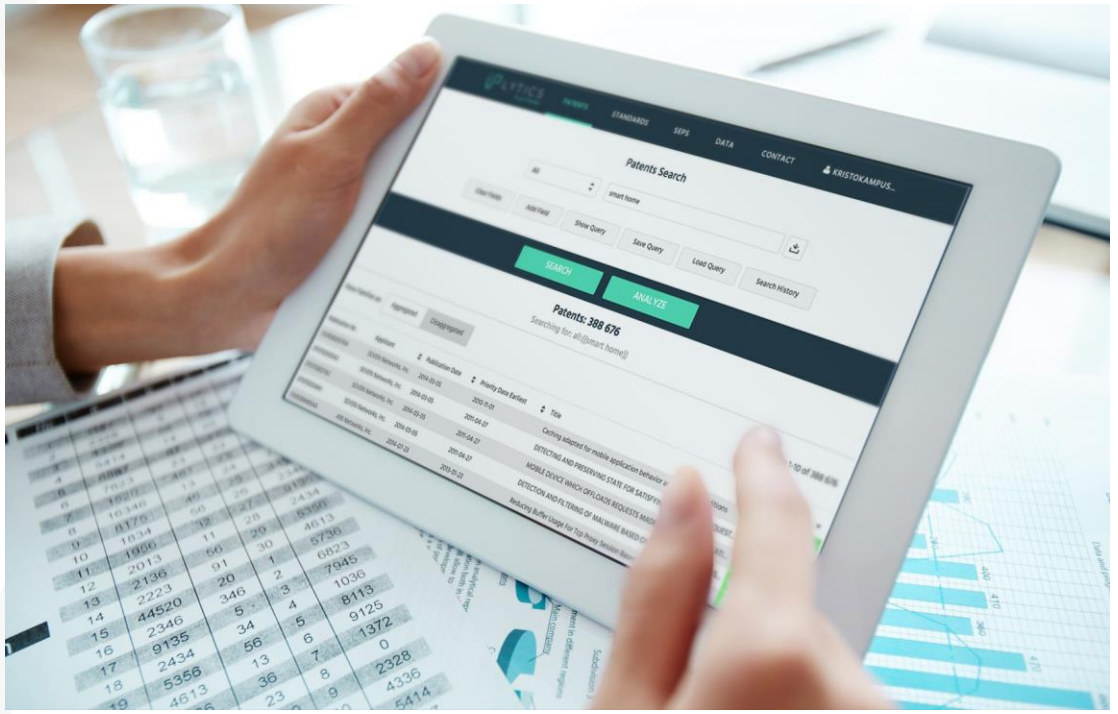
USA +1 512 947 1152



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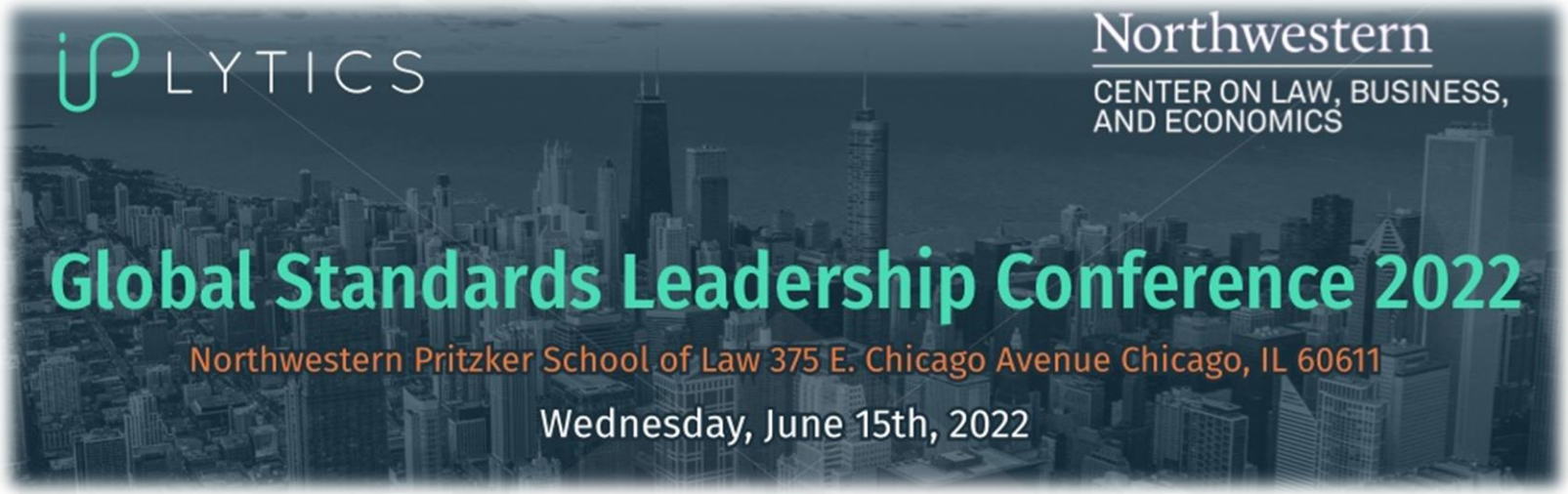
Meet the IPlytics team in person

- IP Counsel Café Annual Meeting, **Palo Alto**, 18-19 of May 2022
- Auto IP USA in **Detroit**, 24 of May 2022
- UCL Patents in Telecom & IoT in **London**, 26-27 May 2022
- IPBC Global in **Chicago**, 12-14 of June 2022
- Global Standards Leadership Conference in **Chicago**, 15 of June 2022
- LES Annual Meeting in **San Francisco**, October 16-19, 2022
- IPBC Asia in **Tokyo**, 31 October -2 November 2022



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