

From Patstat to TIP

The logical path of a patent landscape analysis: from Espacenet to Patstat, from Patstat to TIP

Riccardo Priore · extended webinar edition of the EPIP 2026 talk (Turin)

What Is a Patent Landscape Analysis?

«A patent landscape report is an analytical tool that provides an overview of the patent situation relating to a particular technology, in a particular country or region, or for a particular assignee.»

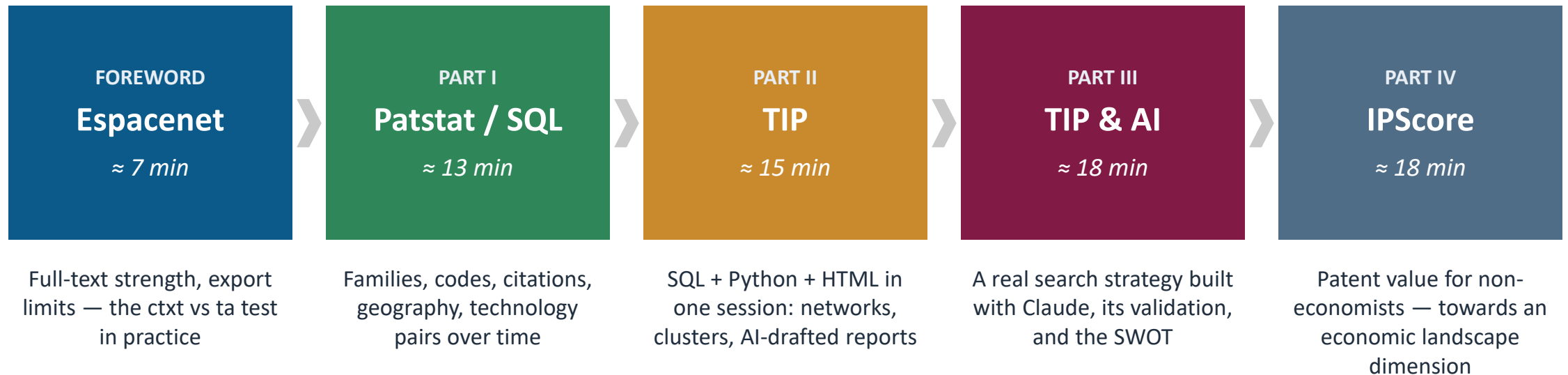
WIPO, Patent Landscape Reports (publication series page)

The Journey in Three Steps

- ▶ Foreword — Espacenet: the starting point, public and accessible to anyone, but with practical limits of scale
- ▶ Part I — Patstat queried in SQL: overcomes Espacenet's limits and, on its own, already covers most of what a credible PLR needs
- ▶ Part II — TIP: the same underlying data, extended with Python and web tools within the same working session
- ▶ The common thread: from raw data to a narrative a decision-maker can act on

Today's Route: One Path, Five Stops

The three-step journey of the EPIP talk, extended with two deeper stops: AI-assisted search and patent value



≈ 4 min opening · ≈ 71 min across the five stops · ≈ 3 min close · ≈ 12 min for questions and comments



FOREWORD

Espacenet: The Starting Point

What Espacenet Is

- ▶ The EPO's free, publicly available patent search engine, accessible via browser with no licence required
- ▶ No SQL or programming skill required: designed to be usable from day one, even by a complete beginner
- ▶ Near-worldwide coverage of patent documents, with simple, intuitive search forms
- ▶ For the large majority of analysts, it is the first tool through which contact is made with patent data

Espacenet's Strength: Full-Text Search

- ▶ Unlike Patstat and TIP, Espacenet allows direct full-text and claims searching
- ▶ Particularly useful in the early stages, when documents must be identified from specific textual wording, not only from classification codes
- ▶ A capability neither Patstat nor TIP natively replicates in the same way, and a reason to return to Espacenet even after moving on to more powerful tools

Full-Text Search in Practice: One Query, Three Organs

ESPACENET SMART SEARCH — the organ term is swapped as needed

```
(c1 any "B22F10 B29C64 B29C67 B33Y10 B33Y30 B33Y40 B33Y80 B33Y70"
```

OR

```
((ctxt all "three?dimens*"
  OR ctxt any "threedimens* tridimension* 3d"
  OR ctxt=("three" prox/distance<2 "dimension")
  OR ctxt=("three" prox/distance<2 "dimensional"))
AND ctxt = "print*"))
```

AND

```
ctxt any "pancrea*"      ← or "liver" / "kidney"
```

363

records — Liver

249

records — Pancreas

333

records — Kidney

⚠ Without the organ term, the base query (codes OR 3D-printing keywords) returns ≈ 202,927 results: all of 3D printing, every industry.

Field codes: c1 = classification (CPC/IPC) · ctxt = title, abstract and claims · ta = title and abstract only (next slide)

Same Query, Narrower Field: Title & Abstract Only

ta VARIANT — same logic, narrower field

```
(cl any "B22F10 B29C64 B29C67  
B33Y10 B33Y30 B33Y40  
B33Y80 B33Y70"
```

OR

```
((ta all "three?dimens*"  
OR ta any "threedimens*  
tridimension* 3d"  
OR ta=("three" prox/distance<2  
"dimension")  
OR ta=("three" prox/distance<2  
"dimensional"))  
AND ta = "print*"))  
AND ta any "pancrea*"
```

50 results found

1. ARTIFICIAL PANCREATIC ISLET TISSUE, PREPARATION THEREFOR, AND APPLICATION THEREOF
WO2019113901A1 • 2019-06-20 • SHENZHEN INST ADV TECH [CN]
Earliest priority: 2017-12-14 • Earliest publication: 2019-06-20
...Artificial **pancreatic** islet tissue, comprising a biocompatible scaffold, **pancreatic** islet cells, and a mixed culture solution. The biocompatible scaffold and the **pancreatic** islet tissue are made into bioactive artificial **pancreatic** islet tissue using **3D** bioprinting. The mixed culture solution is... **3D** printing. The artificial **pancreatic** islet tissue can be used as a tool for pathophysiological mechanism research and treatment of diabetes. ...

2. PANCREATIN INACTIVATION STENT DRAINAGE TUBE AND PREPARATION METHOD THEREFOR
WO2024021389A1 • 2024-02-01 • UNIV CENTRAL SOUTH [CN]
Earliest priority: 2022-07-25 • Earliest publication: 2022-08-26
...A **pancreatin** inactivation stent drainage tube (1) and a preparation method therefor. The stent drainage tube (1) comprises a stent... transparent medical polyvinyl chloride (PVC) or polyimide (PI) material by means of **3D** printing technology, and is of a tubular... activity against **pancreatin**, thereby improving the safety of **pancreaticojejunostomy** ...

3. A NEXT GENERATION INSULIN SECRETING PANCREATIC TISSUE AVOIDING AUTOIMMUN ATTACKS AND PRODUCTION METHOD THEREFOR
WO2020167277A2 (A9) • 2020-08-20 • ESKISEHIR OSMANGAZI UNIV [TR]
Earliest priority: 2019-02-11 • Earliest publication: 2020-08-20
... Diabetes) and also the production of glucose responsive insulin secreting tissues by means of developing new techniques in endocrine **pancreatic**... **printing** techniques in combination, which are two different fields of tissue engineering, a hybrid **printing** technique is developed, and thus a bioactive matrix production re-**printed** by using stem cells of extracellular matrix of the **pancreas** is carried out. Insulin ...

4. THREE-DIMENSIONAL MODELING METHOD FOR 3D PRINTING WHEN PLANNING PANCREATIC RESECTION IN PATIENTS WITH TUMOR...
RU2020106533A (A3,C2) • 2020-04-20 • Федеральное государственное бюджетное учреждение "Национальный медицинский исследовательский центр
Earliest priority: 2020-02-12 • Earliest publication: 2020-04-20
...FIELD: medicine SUBSTANCE: invention refers to medicine, radiation diagnostics and can be used for **3D** modeling for **3D** printing when... a **three-dimensional** **printing** file STL-file. Obtained file is loaded into **3D** print program FlashPrint and sent to **3D**... method provides planning of **pancreatic** resections in patients with tumor involvement by **printing** a **three-dimensional** model of the region of interest 1. cl. 11. dur. 3. ex.

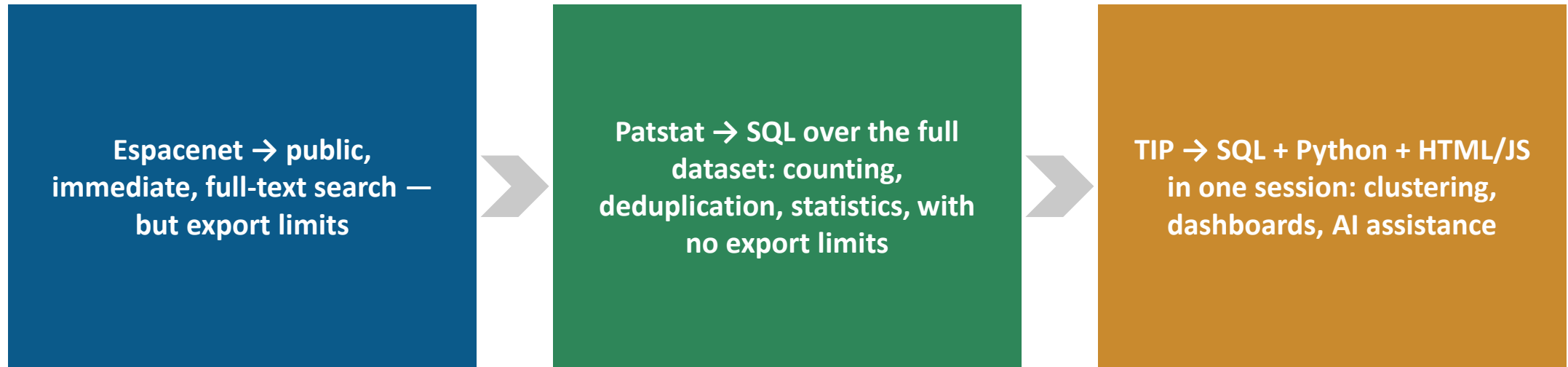
Pancreas: ctxt 249 → ta 50 (≈ 5× fewer). Inventors often describe the printing step in the claims without repeating it in the abstract.

Bridge to Part III: keyword search on PATSTAT covers titles and abstracts, not claims — it behaves like ta, so classification codes must compensate.

Espacenet's Limitation: Scale

- ▶ Results can only be exported up to a maximum number of records per session
- ▶ For a broad landscape, this forces multiple, repeated download sessions
- ▶ With very large result sets, the operation sometimes becomes practically unfeasible, or at best discouraging
- ▶ No family deduplication, no server-side aggregate statistics, no large-scale relational querying: systematic analysis requires a different tool

The Complete Path, in Brief



Each step exists to overcome the practical limit of the one before it



PART I

From Espacenet to Patstat: What SQL Can Already Do

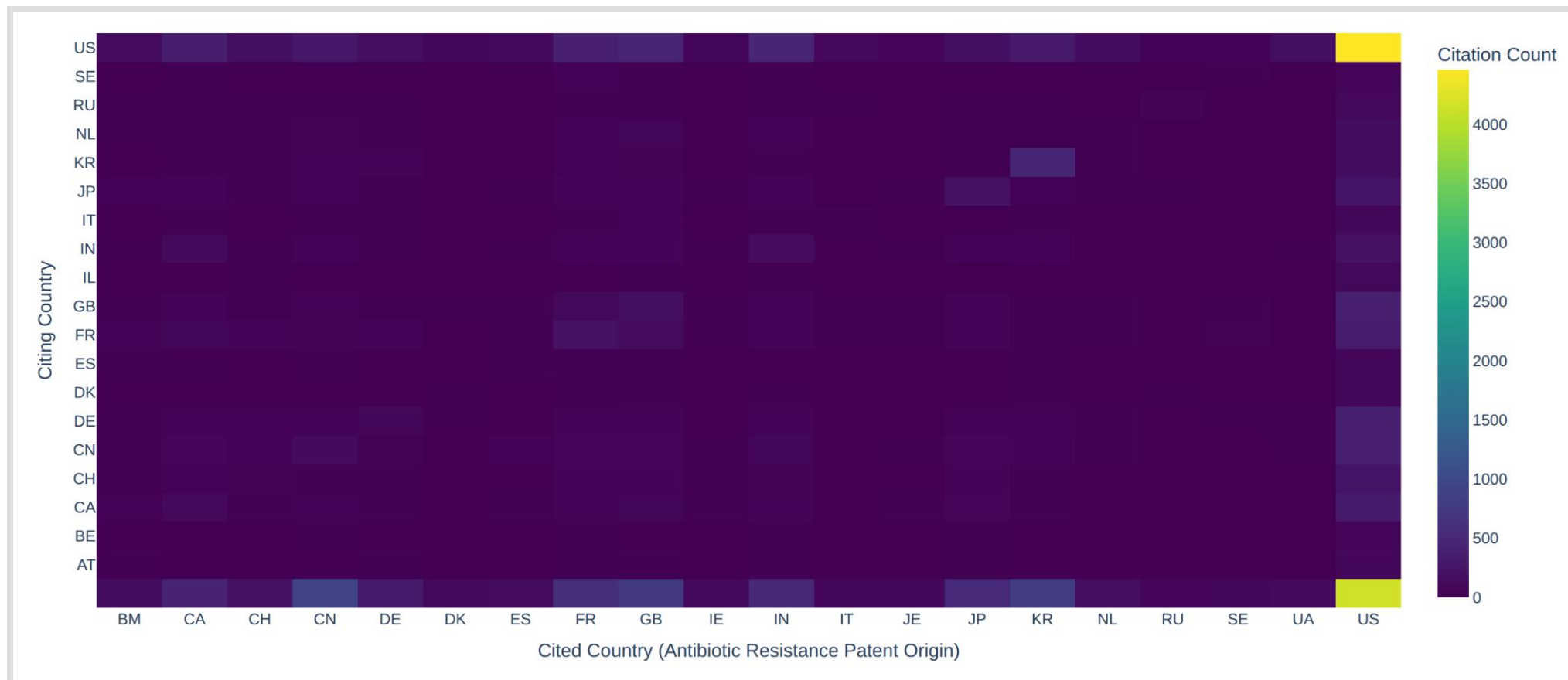
The Basic Building Blocks

- ▶ Counting without double-counting: patent-family deduplication
- ▶ Technology classification via IPC/CPC codes
- ▶ Co-occurrence matrices between codes, mapping the relationships between technologies
- ▶ Equivalent families (docdb_family_id): finding what keywords alone cannot

Who, Where, and Who Cites Whom

- ▶ Ranking applicants and inventors; geographic distribution of families
- ▶ Backward and forward citations: where an invention comes from, how much it influenced what follows
- ▶ Time trends, averages, contingency tables (CASE WHEN)

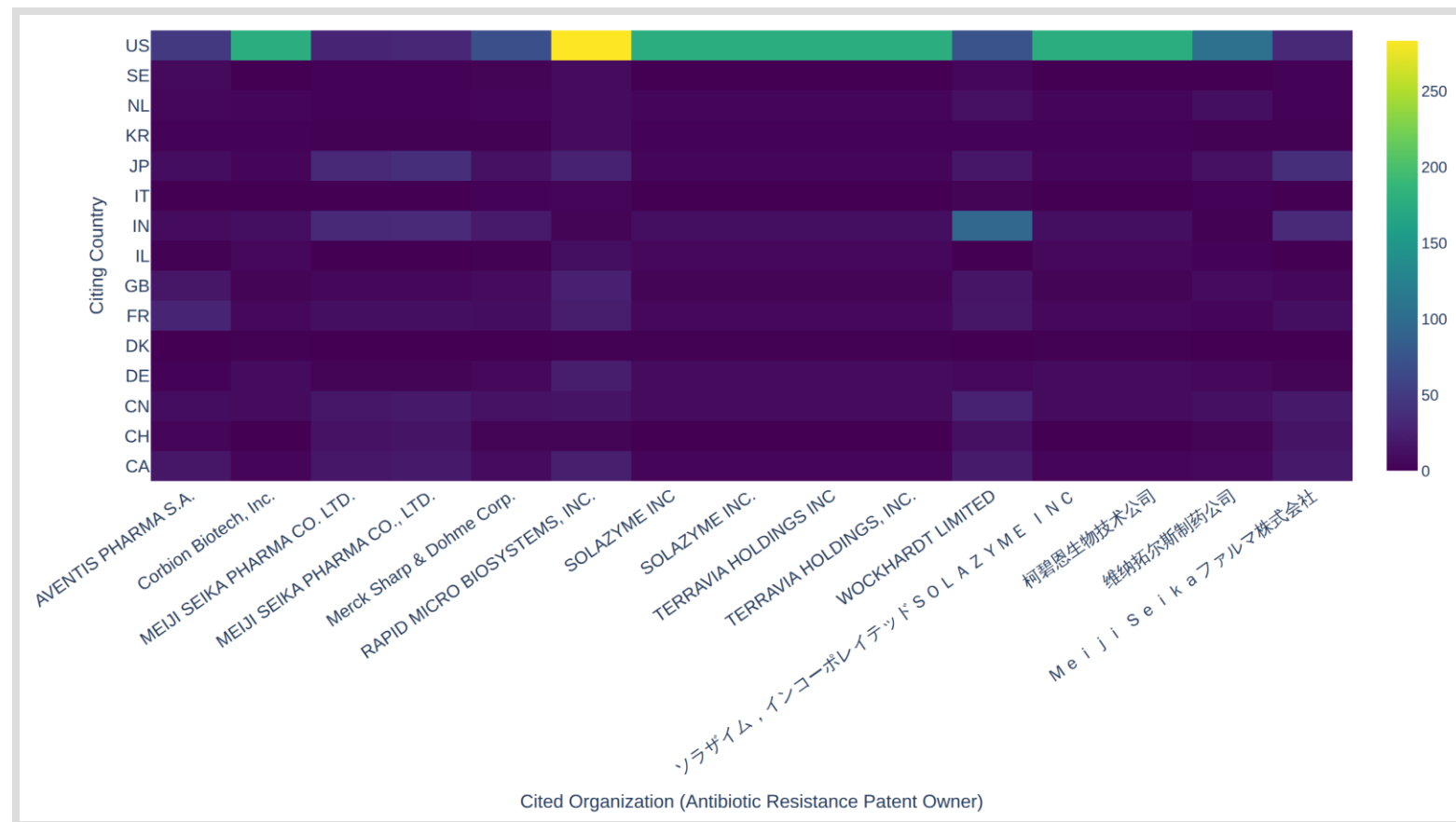
Who Cites Whom: Country-to-Country Citation Flows



US-origin patents attract 41% of forward citations; the unlabelled bottom row is “country unknown” (30% of citing records)

Source: Antibiotic Resistance Patent Landscape — TIP demo report, Analysis 12 (35,956 forward citations) · [→ open the interactive report \(leave it open\)](#)

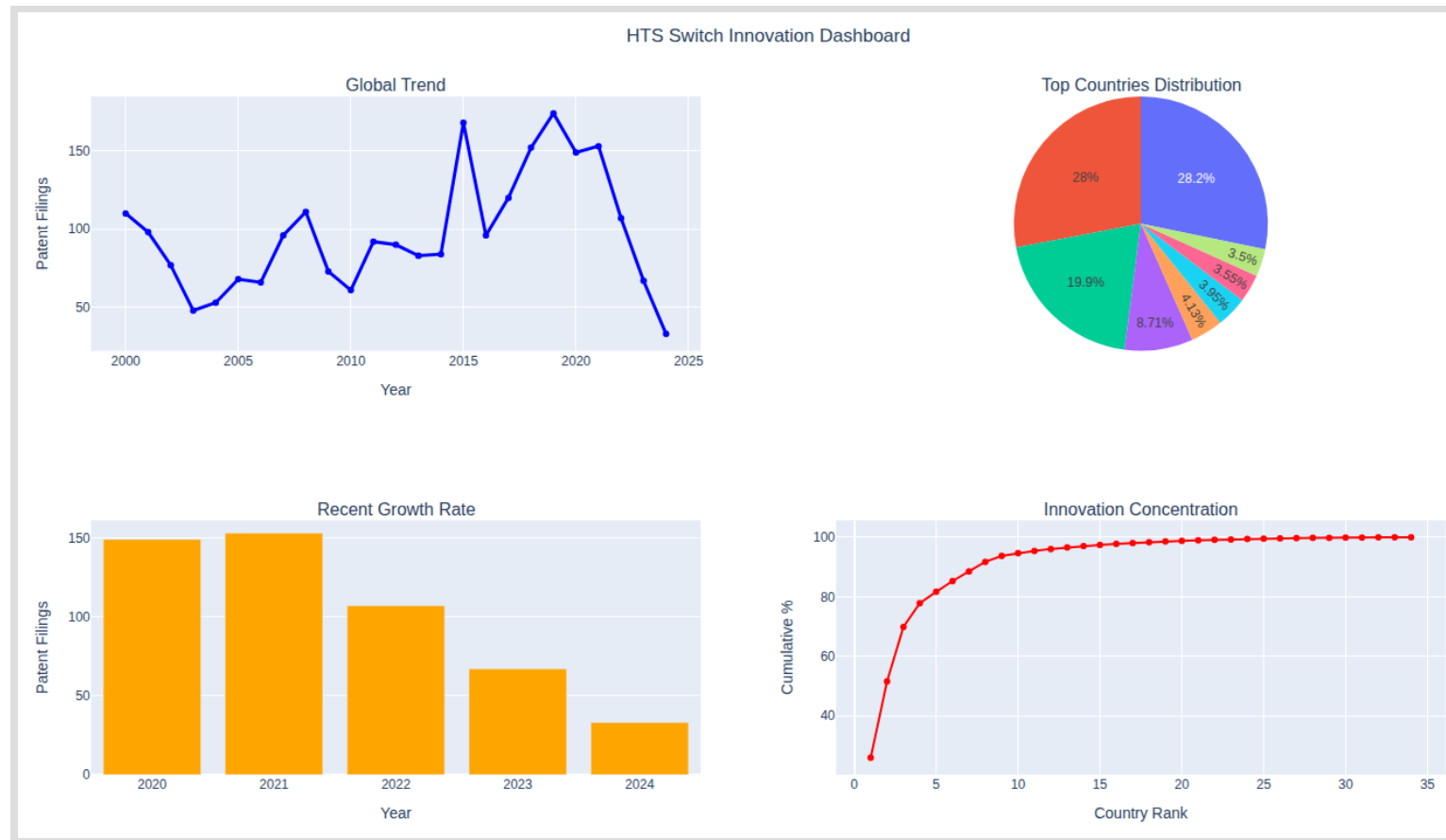
Who Cites Whom: the Most-Cited Organisations



Top 15 cited applicants × top 15 citing countries — the same companies appear under several names and scripts

Source: Antibiotic Resistance Patent Landscape — TIP demo report · [Interactive version: report section «Analysis 13»](#)

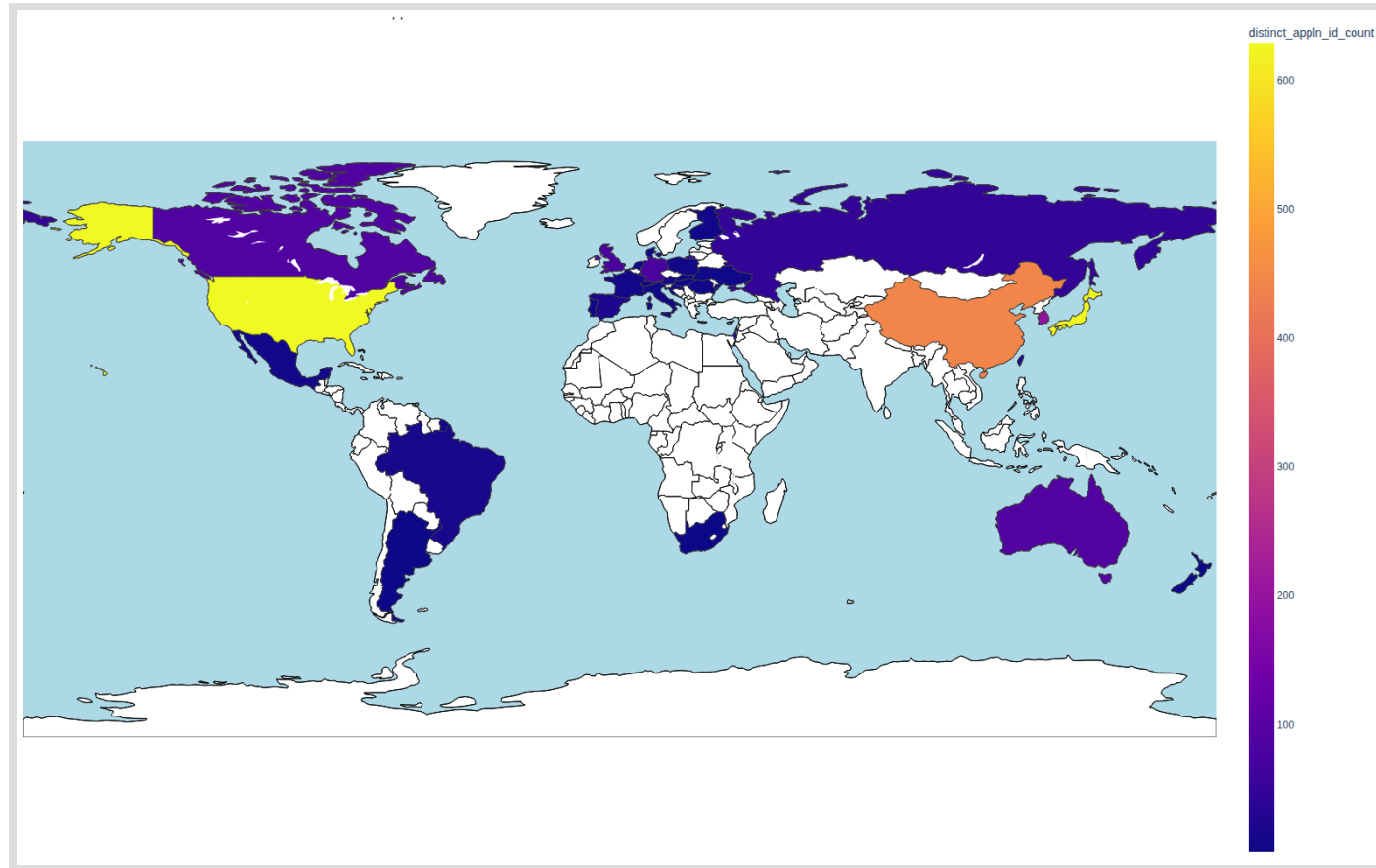
From Tabular Data to a First Chart



Summary dashboard built directly from SQL counts: trend, distribution, geographic concentration

Source: DEEPTeCH-Russo, HTS Switches Innovation Dashboard

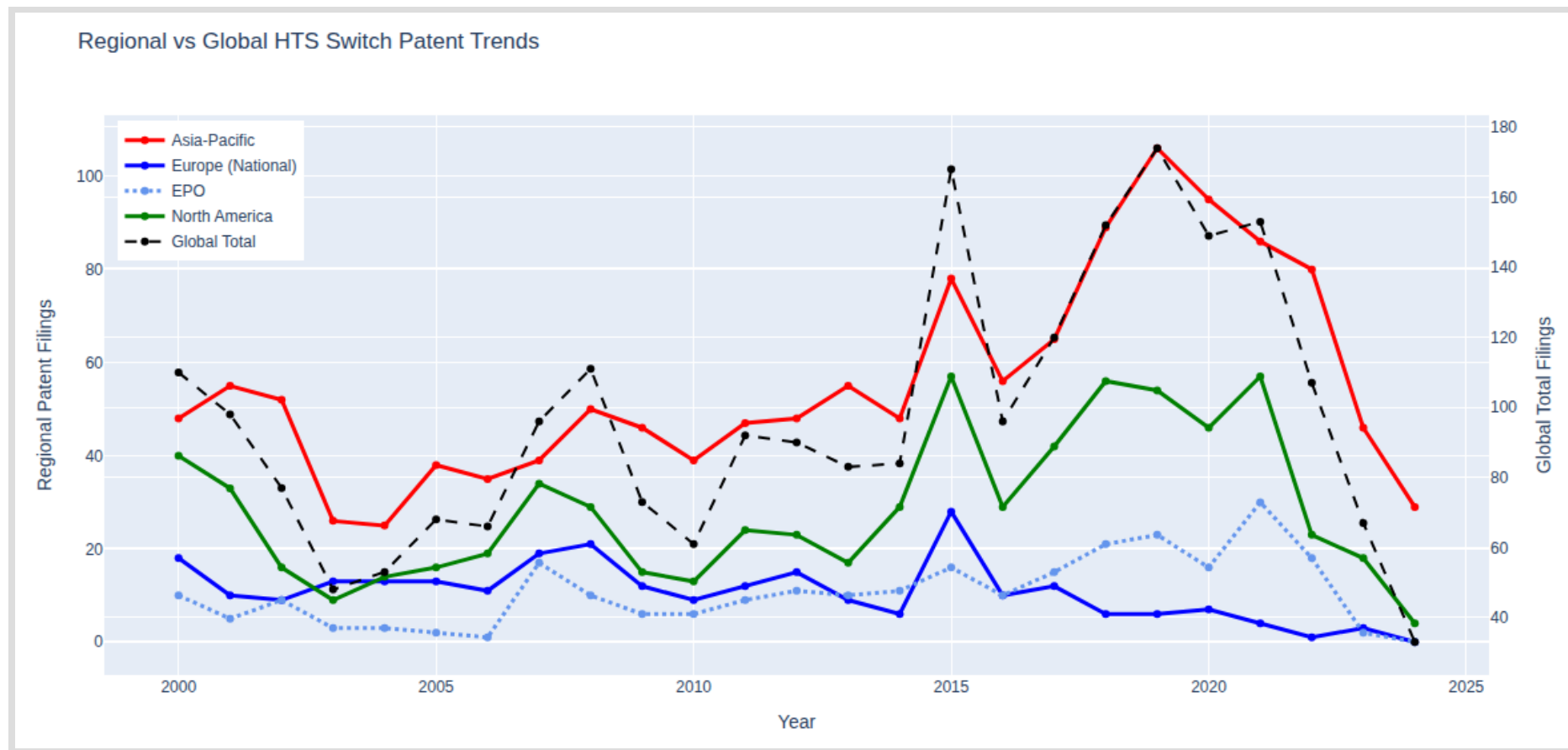
The Geography of a Technology



Territorial coverage of patent families, by distinct application count

Source: DEEPTech-Russo, HTS Switches Filings Map

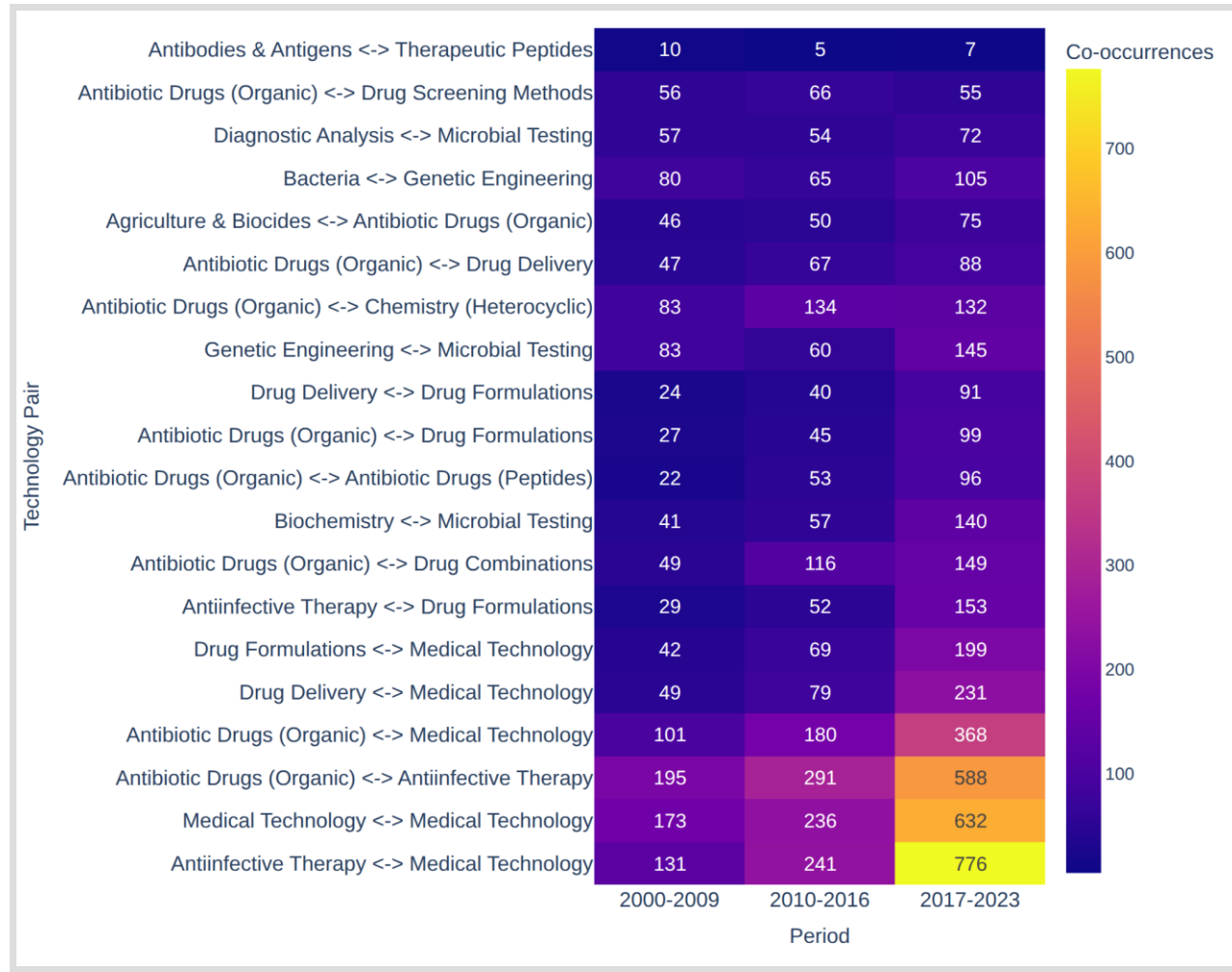
Telling a Story Over Time



Regional vs. global trend: the same SQL query, read over time, becomes a narrative

Source: DEEPTech-Russo, Regional vs Global HTS Switch Trends

How Technologies Converge Over Time



Technology Pair Evolution Across the Three Periods

- Each row is a pair of technology areas found on the same patent family; each column a period.
- The co-occurrence matrix of slide 13, simply split by period: still one SQL count, read over time.
- Antiinfective therapy ↔ medical technology: 131 → 241 → 776 co-occurrences — the convergence of drugs and devices.
- Caveat for the reader: the periods are 10, 7 and 7 years long — compare shares, not raw counts.

Source: Antibiotic Resistance Patent Landscape — TIP demo report
 Interactive version: report section «Analysis 8b — pair evolution heatmap»

Quality and Legal Status

- ▶ Triadic families and renewal-fee payments as proxies for economic value
- ▶ EP Register: examination citations, licences, ownership changes, oppositions and revocations
- ▶ Text mining (CONTAINS/FREETEXT) and the first built-in graphic tools

Where SQL Alone Reaches Its Limit

- ▶ No native clustering, dimensionality reduction, or machine learning (e.g. t-SNE)
- ▶ Inherently tabular output: no interactive dashboards
- ▶ Any further processing requires exporting to another tool, breaking the continuity of the analysis



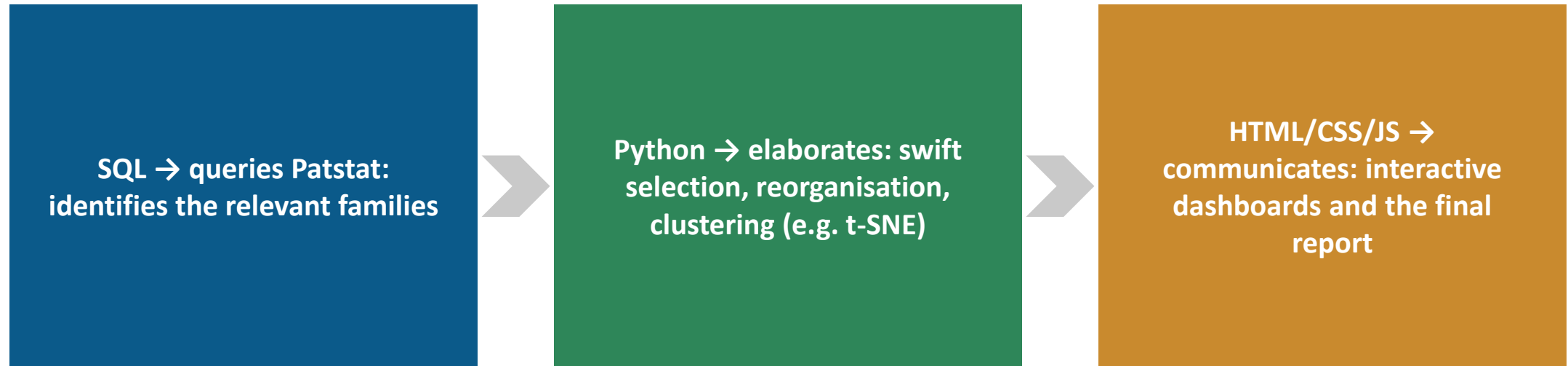
PART II

Beyond Patstat: Extending the Analysis with TIP

What TIP Is

- ▶ The EPO's Technology Intelligence Platform: JupyterLab in the cloud, tip.epo.org
- ▶ Direct access to Patstat via epo.tipdata.patstat (PatstatClient, SQLAlchemy ORM)
- ▶ The same tables as the HANDBOOK, now queryable in SQL or Python within the same session
- ▶ Beyond widening the analytical perspective, TIP's operational speed matters: less time spent on export/import cycles frees the analyst to focus on refining the search strategy itself

One Session, Many Languages



All within the same notebook: no intermediate exports

Same Data, Richer Interaction

FlowNano -- Triadic Patent Families: Country of Residence x Applicants
For each country of residence detectable among triadic-family applicants, the corresponding applicants and their triadic-family counts.

611
Triadic Families

33
Countries Detected

920
Unique Applicants

All countries
Search applicant name...
937 row(s) shown

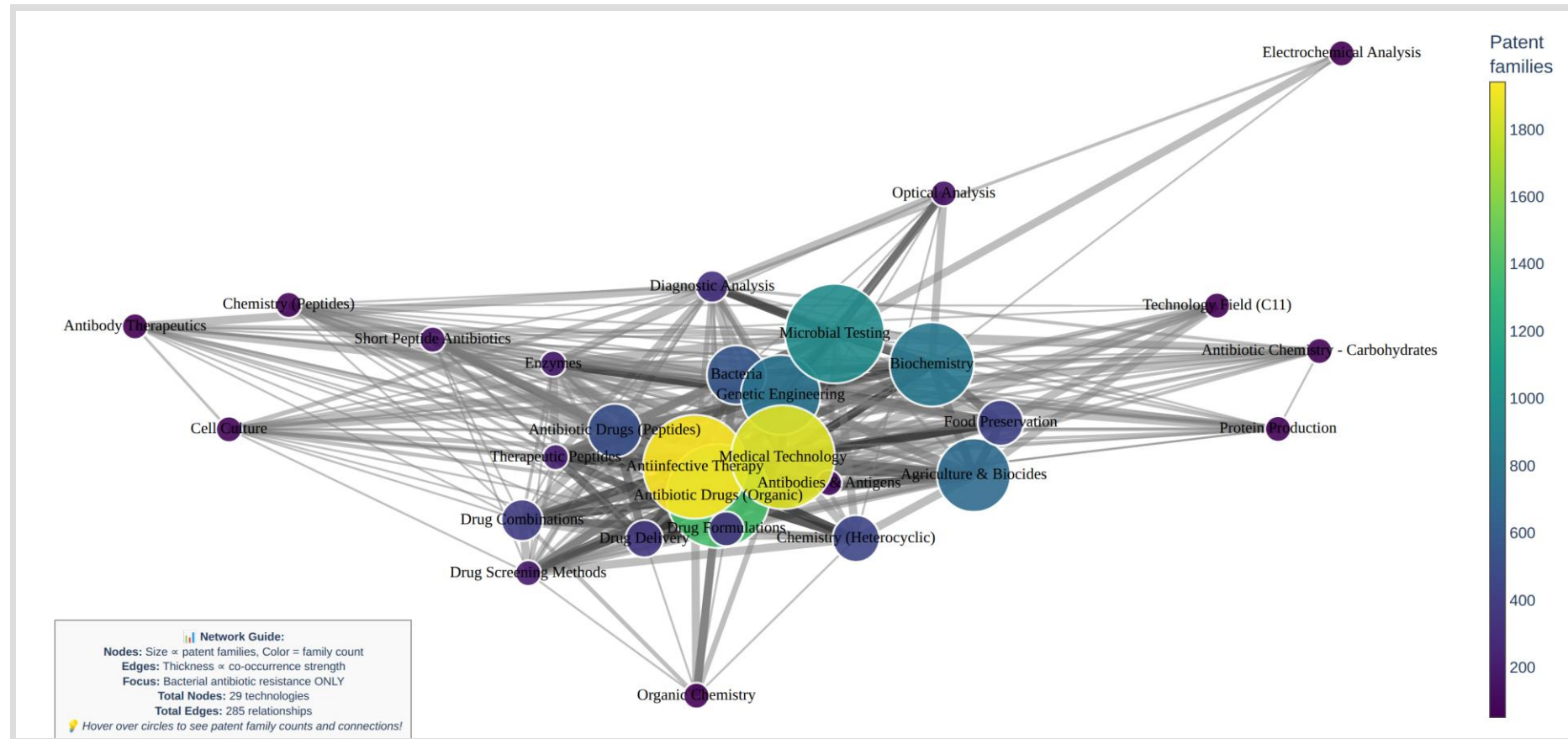
Country	Country Families	Applicant	N Triadic Families	Family IDs (hover for full list)
AT	2	HARRER, MARTIN	1	47469991
AT	2	WHITEHEAD, ADAM	1	47469991
AT	2	GILMEISTER ENERGY STORAGE	1	47469991
AT	2	CELLSTROM	1	47469991
AT	2	DICHAND, MICHAEL	1	48790499
AU	13	REDFLOW R&D	7	39787954; 41706774; 43899739; 52279222; 52827444; 53799452; 54008060
AU	13	REDFLOW	3	39787954; 41706774; 43899739
AU	13	WINTER, ALEXANDER RUDOLF	3	39787954; 41706774; 43899739
AU	13	NEWSOUTH INNOVATIONS	2	37570018; 70461808
AU	13	GELION TECHNOLOGIES	2	53777059; 69776458
AU	13	KAZACOS, NICHOLAS, MICHAEL	1	37570018
AU	13	KAZACOS, GEORGE, CHRISTOPHER	1	37570018
AU	13	V-FUEL	1	37570018
AU	13	COAD, NATHAN	1	47746829
AU	13	GELION TECHNOLOGIES PTY LTD.	1	53777059
AU	13	UNIVERSITY OF SYDNEY	1	53777059
AU	13	MONASH UNIVERSITY	1	56012948
AU	13	GELION TECHNOLOGIES PTY LTD	1	69776458
AU	13	NEWSOUTH INNOVATIONS, PTY LIMITED	1	70461808
BE	4	SOLVAY	2	43481627; 48652120
BE	4	VANDENBORRE, HUGO	1	43481627

Source: PATSTAT (EPO TIP Production) | Period: 2000-2024 | Four-branch IPC+keyword search (cross-pollination rule)

Explorable, filterable table built on Patstat data extracted in TIP: 611 triadic families, 920 applicants

Source: DEEPTTECH-FlowNano, Country x Applicants Explorer

Mapping a Technology Space as a Network



Node size/colour = patent families per area; edge thickness = how often two areas share a family — drawn in Python, in TIP

Source: Antibiotic Resistance Patent Landscape — TIP demo report · [Interactive version: report section «Analysis 8b — network diagram»](#)

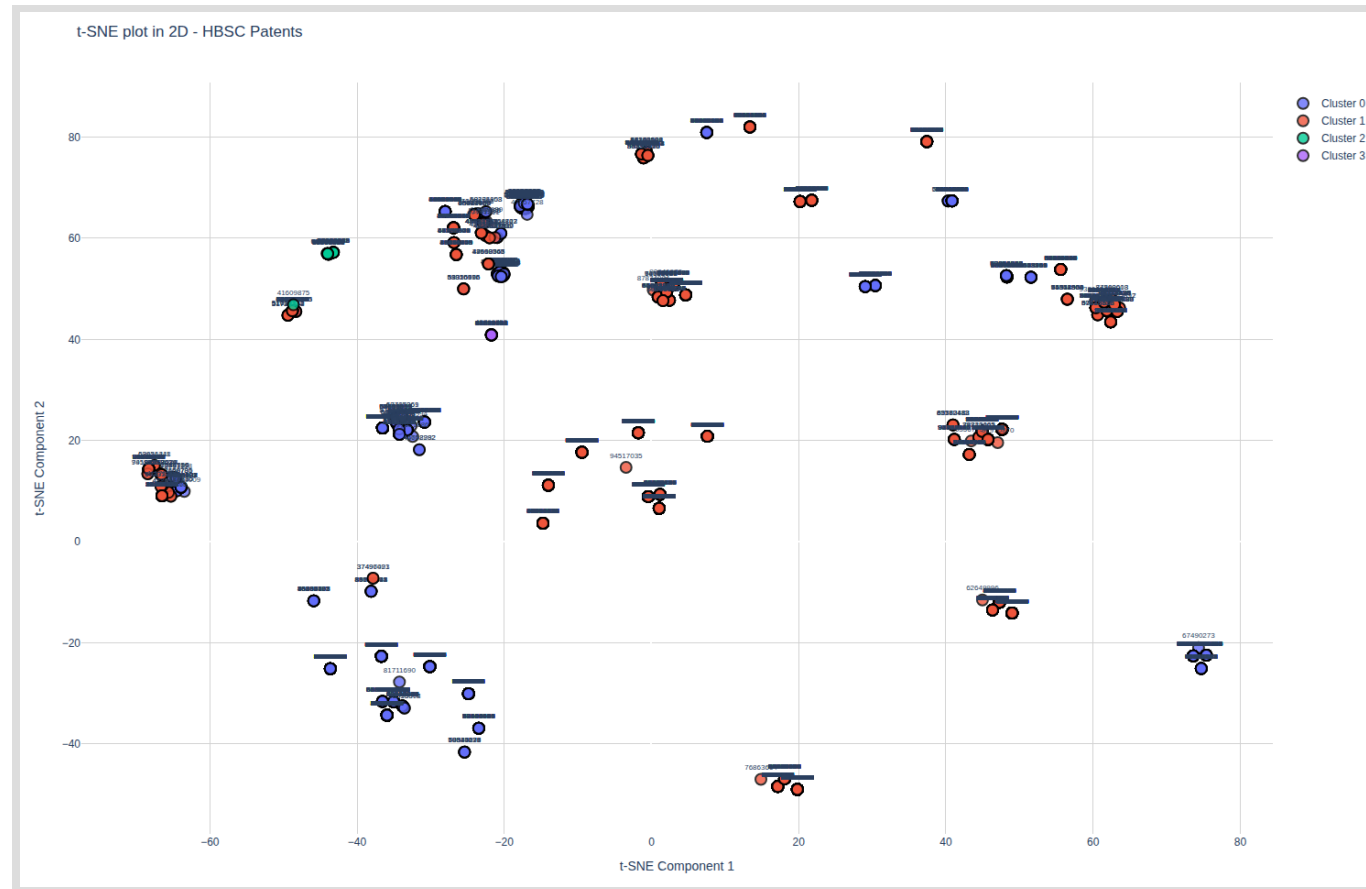
Clustering Becomes Explorable



Interactive dashboard based on t-SNE + K-Means: 7,795 families grouped into 4 technology clusters

Source: DEEPTeCH-Novac, HBSC Patent Landscape Cluster Explorer

A Concrete Example: The t-SNE Cited by WIPO

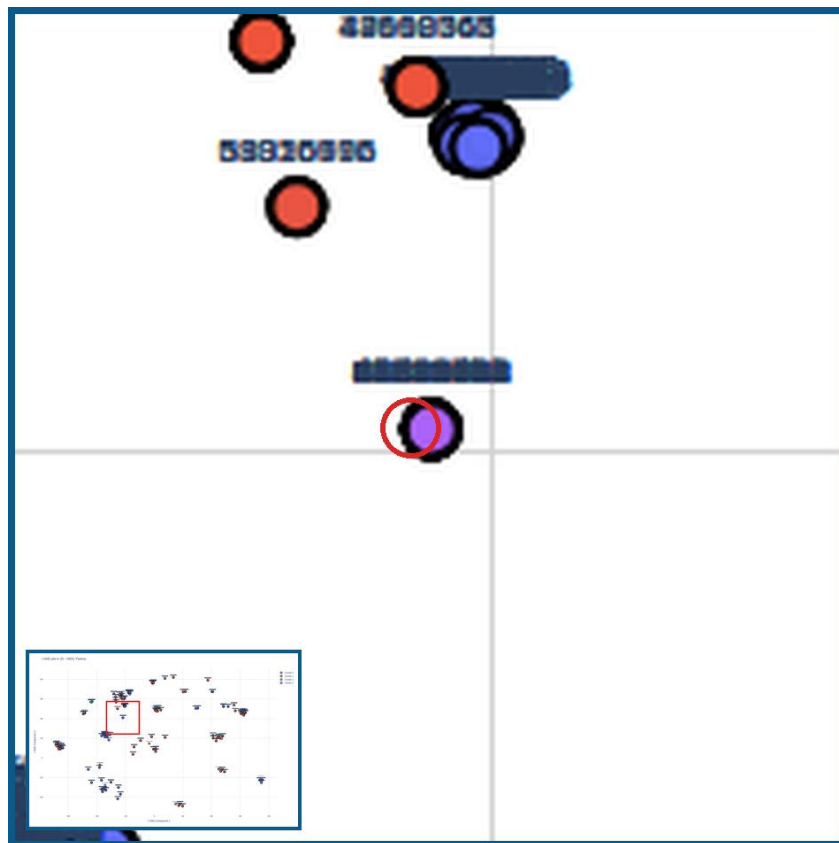


Dimensionality reduction of IPC codes: technological groupings invisible to a single SQL query

Source: DEEPTeCH-Novac, HBSC t-SNE Analysis (2D)

From Cluster to Document: Full Granularity

ON THE T-SNE PLOT



Cluster 3 — Battery/Supercapacitor Charging Systems: 16 patent families collapse into a single point. The overlapping label is unreadable in a static image.

EXPLODED INSIDE THE SAME TIP SESSION

Publication No.	Title	Applicant
WO2022091673A1 (2020)	Abnormality Detection Method, Abnormality Detection Device, Power Storage Device, and Computer Program	GS Yuasa International Ltd.
EP3268974A1 (2015)	Nickel Supercapacitor Engine Starting Module	Saft America
US2013162216A1 (2011)	Stacks of Internally Connected Surface-Mediated Cells and Methods of Operating Same	Zhamu, Aruna
EP3510687A1 (2016)	Supercapacitor Charge System and Method	E-Synergy Graphene Research Pte. Ltd.
US11340299B2 (2017)	Systems and Methods for Monitoring of a Hybrid Energy Storage Device	GM Global Technology Operations LLC
JP2012043682A (2010)	Battery Pack System	Toshiba Corp.

+ 10 more documents from the same query, each linked to Espacenet

Source: DEEPTech-Novac, HBSC t-SNE Analysis + Cluster Explorer — Cluster 3 detail, 6 of 16 families shown

Why It Matters: WIPO Says So Too

«Clustering is a statistical technique that groups a set of objects in such a way that objects in the same group are more similar to each other than to those in other groups.»

A. Trippe for WIPO, Guidelines for Preparing Patent Landscape Reports, 2015, §6.5, p. 58

The Contribution of Embedded Artificial Intelligence

- ▶ Assisted classification of ambiguous documents
- ▶ Automatic summarisation of abstracts and claims
- ▶ Assistance in building SQL/Python queries
- ▶ It assists the analyst, it does not replace them: human judgement remains central

From Notebook to Narrative: the Report Writes Itself — Almost

“Overall Conclusions” of the antibiotic-resistance report (condensed): figures from executed TIP cells, prose drafted with Claude

1 · Geographic leadership China leads with 2,232 national applications (27.8%), ahead of the US (1,540; 19.2%). Asia-Pacific: 51.2% of national filings.	2 · Declining territorial protection 🚩 Applications per family fall from 4.44 (2000–05) to 1.35 (2021–23), –69.6%; single-country filings rise from 47.5% to 86.2%.	3 · Low grant rate 🚩 40.37% granted (5,716 of 14,160): “more applications rejected or abandoned than granted”.	4 · Innovation momentum 🚩 “Family creation” peaks in 2015–2019 (2,362 applications), then –40.8% in 2020–2023 (1,399).	5 · Institutional landscape 4,456 applicants: individuals 32.8%, companies 32.5%, universities 24.4%.
6 · Technology diversity 130 IPC classes, 14.7 classifications per patent: pharmaceuticals 55%, diagnostics 34%, biotechnology 11%.	7 · Temporal evolution Peak filing year 2015; more families, fewer applications per family; China’s rise to dominance.	8 · Global impact Mapped to UN SDGs: health 98.1%, innovation 92.9%, food security 63.9%, water quality 26.9%.	9 · Data reliability 3,717 patent families from PATSTAT; every figure taken from executed notebook outputs.	10 · Limitations Publication lag, 3–5-year citation lag, grants still pending, classification-based search.

① **TIP notebook** executed queries → numbers

② **Claude** drafts the narrative

③ **The analyst** verifies and signs off 🚩

Source: Antibiotic Resistance Patent Landscape — TIP demo report · [Interactive version: report section «Overall Conclusions»](#)

What the Analyst Still Has to Check

The report says...	A careful reading shows...	SWOT link (slide 49)
■3 · Grant rate 40.37%: “more applications rejected or abandoned than granted”	Applications still pending (filed up to 2023) are counted as “not granted”: the rate is understated and the conclusion does not follow.	W · AI is confidently wrong
■2 · Applications per family –69.6%: “declining territorial protection”	Recent families are still inside the 30-month PCT window — their national-phase entries have not happened yet. Part of the drop is a truncation artefact.	W · errors hard to catch without data knowledge
■4 · Innovation momentum: “a 40.8% decline” in 2020–2023	The last period lasts 4 years, the previous one 5: per year the drop is ~26%. Filings from 2022–23 are still partly unpublished (18-month lag), and “families” are in fact applications.	W · errors hard to catch without data knowledge
Diagnostics show “the highest growth rate” (+122%)	The table beside it reports +302% for antiinfective therapy: text and table were produced in different sessions and never re-aligned.	W · errors hard to catch without data knowledge
Most-cited organisations, ranked by applicant name	One company, many names: Solazyme / TerraVia / Corbion fill at least six columns of slide 16, Meiji Seika three; WOCKHARDT and VOKKHARDT rank separately. Harmonise names before ranking.	W · unverified queries risk client-facing quality
Microalgae-oil companies among the most cited	Possibly off-topic: “antibiotic resistance” can appear as a genetic selection marker rather than as the clinical problem. A relevance check is needed.	T · over-reliance without human review

None of these is a software bug: each is a plausible sentence that reads perfectly well. That is exactly why human review is not optional.

PART III

TIP & Artificial Intelligence for Patlib Centres

Case Study: 3D Bioprinting for the Pancreas

A patent-landscape search strategy designed in TIP, with Claude AI

DEEPTeCH Patent Landscape — FTO & technology monitoring

Goal: find every patent family that combines 3D printing / additive manufacturing with a pancreatic application — and nothing else.

Why this case: two young fields intersecting, a vocabulary that keeps changing, and examiners who classify the same invention in very different places. Exactly where an AI assistant earns its keep — and where its output must be checked.

What follows: scope → codes and keywords → branch logic → query design → merge → validation → the first results, read critically.

46

canonical patent families

4

search branches

8

IPC/CPC codes

2000–2024

filing-year window

73.9% of families of CN origin

What We Are Looking For: Three Application Domains

Scope defined with Claude AI before writing a single query: 3D printing applied to pancreatic biology

1 · Tissue engineering

Functional pancreatic tissue printed layer by layer, with bioinks loaded with islets of Langerhans, beta cells or stem-cell-derived progenitors.

Goal: replacement tissue for Type 1 diabetes patients.

Example patents

Extrusion bioprinting of islet-laden hydrogels · SLA/DLP scaffold photopolymerisation · bioinks (alginate, GelMA, fibrin)

2 · Organ-on-chip / in vitro models

3D-printed pancreatic microfluidic devices used as drug-screening platforms and disease models.

Benefit: less animal testing, patient-specific pharmacological profiling.

Example patents

Pancreatic microfluidic chips · drug-screening platforms · glucose-responsive in vitro models

3 · Surgical & medical devices

3D-printed anatomical replicas, surgical guides and implantable devices whose geometry comes from patient imaging (CT/MRI).

Materials: biocompatible polymers, resins, metal composites.

Example patents

Patient-specific surgical guides · bioartificial pancreas implants · replicas for pre-surgical planning

Key rule: a patent qualifies only if it combines BOTH a 3D-printing / additive-manufacturing element AND an explicit pancreatic context.

Codes and Keywords: Why We Need Both

Tool 1 — Classification codes (IPC/CPC)

What they are

Assigned by the patent examiner, like a library catalogue — independently of the inventor's wording.

Why it helps

A “stereolithography scaffold for pancreatic islet encapsulation” gets B29C 64 (polymer 3D printing) even if the text only says “photocuring” and “layer-by-layer deposition”.

Catches: patents regardless of the words used

Limitation: many bioprinting-for-pancreas patents receive broad biomedical codes (A61B, A61F, A61L) — invisible to a code-only search.

Tool 2 — Keywords (text search)

What they are

A structured search of titles and abstracts: “3D printing” AND “pancreas” at the same time.

Why it helps

A patent on “extrusion bioprinting of a pancreatic organoid” may carry only A61F 2 (implants) — but its abstract says “bioprinting” and “pancreas”. Keywords find it; codes alone would miss it.

Catches: explicit language, however the patent was classified

Limitation: “%3d%” alone matches millions of documents (3D graphics, 3D analysis, gaming...) — keywords must be combined and confirmed.

Solution: use **BOTH**, in a deliberate pattern — each compensates for the other's blind spots (the cross-pollination principle).

The 8 Classification Codes — Two Pools

Selected with Claude AI. IPC codes live in TLS209_APPLN_IPC, CPC codes in TLS224_APPLN_CPC — hence Branch 1 and Branch 2.

IPC pool — Branch 1 (3 codes, TLS209_APPLN_IPC)

B22F 10%	Additive manufacturing — metallic powders Sintering, binder jetting, metal 3D printing: metallic implants or surgical guides. Smallest branch.
B29C 64%	3D printing from plastics Extrusion, stereolithography, light curing — the main code for bioprinting scaffolds and polymer devices.
B29C 67%	Hybrid / novel forming processes Residual subgroup: multi-material bioprinting blending polymeric and biological components.

CPC pool — Branch 2 (5 codes, TLS224_APPLN_CPC)

B33Y 10%	Processes — layer-by-layer deposition, slicing, process control
B33Y 30%	Apparatus — printheads, bioprinter configurations, bioreactor-bioprinters
B33Y 40%	Auxiliary operations — post-processing, sterilisation, cross-linking, cell seeding
B33Y 70%	Feedstocks / bioinks — hydrogels with cells, filaments, photocurable resins
B33Y 80%	3D-printed products — tissue constructs, scaffolds, implants, devices

★ B33Y is a CPC-only class (no IPC equivalent), created to gather all additive manufacturing — chemistry, engineering, biology — into one cross-reference system. Every pool is confirmed by the *pancreas* keyword inside the query.

The 4 Keyword Lists — and Why List D Is Mandatory

A dim3d_kw

Ambiguous 3D terms

Used in Branch 3A — must be confirmed by BOTH List C and List D.

%three_dims%

%threedimens%

%tridimension%

%3d%

“%3d%” alone matches millions of documents (3D movies, graphics, analysis...).

B additive_kw

Self-contained AM terms

Used in Branch 3B — confirmed by List D only.

%additive_manufactur%

%bioprint%

%bio_print%

%stereolithograph%

%rapid_prototyp%

%fused_deposition%

These terms already encode printing: adding List C would wrongly exclude valid patents.

C print_kw

Print confirmation

Used ONLY in Branch 3A, to disambiguate List A.

%print%

One pattern, a lot of work: it turns “3D” into “3D printing”, filtering out 3D modelling and graphics.

D pancreas_kw

Mandatory biological context

Applied INSIDE every branch query — no exceptions.

%pancrea%

Pancreas, pancreatic, pancreatitis, pancreatectomy... Without it: millions of non-pancreatic 3D-printing patents.

★ List D (%pancrea%) is the cornerstone of the whole strategy: it is what turns millions of hits into a 46-family result.

The Cross-Pollination Principle

If the IPC/CPC code already encodes concept A (3D printing), the keyword confirms concept B (pancreas). If the keywords find explicit printing + pancreas language, they rescue patents filed under broad biomedical codes (A61B, A61F).

Axis 1 — IPC/CPC codes (Branches 1 & 2)

Is this patent about 3D printing / additive manufacturing?

Confirmed by pancreas_kw applied inside the query — captures inventors who wrote “scaffold” instead of “print”.

Example rescued: a B29C 64 patent on a “photocured scaffold” for “islets of Langerhans” — the code catches it even though “bioprinting” never appears.

AND

Axis 2 — Keywords (Branches 3A & 3B)

Does this patent explicitly describe pancreatic 3D printing?

Confirmed by dim3d_kw + print_kw + pancreas_kw (3A) or additive_kw + pancreas_kw (3B).

Example rescued: an A61F 2 patent on a “3D printed bioartificial pancreas” — filed as a medical device, missed by the code search, found by the keywords.

Why the keyword branch dominates: 41 of 46 families (89%)

Examiners classify bioprinting-for-pancreas patents under broad biomedical codes (A61B, A61F, A61L) rather than additive-manufacturing codes (B29C, B33Y). As B33Y matures, the code branches should grow in relative share.

Step by Step: the Same Four-Step Logic in Every Branch

① pool or keyword set ② pool size before filtering ③ AND pancreas_kw (mandatory) ④ branch result

Branch 1 — IPC B22F / B29C <i>metallic & polymer AM</i>	Branch 2 — CPC B33Y <i>unified AM class</i>	Branch 3A ★ — text search <i>ambiguous 3D terms</i>	Branch 3B — text search <i>self-contained AM terms</i>
① IPC: B22F 10% IPC: B29C 64% IPC: B29C 67%	① CPC: B33Y 10% 30% 40% 70% 80%	① title + abstract List A (%3d%...) + List C (%print%)	① title + abstract List B (%bioprint%, %stereolithograph%...)
② Large pools — all 3D printing in metals and plastics, every industry	② Hundreds of thousands — all additive manufacturing	② Tens of millions — “%3d%” alone is everywhere	② Much smaller — List B is already AM-specific
AND	AND	AND	AND
③ pancreas_kw inside the query	③ pancreas_kw inside the query	③ List A AND List C AND pancreas_kw — all three together	③ List B AND pancreas_kw (no print_kw needed)
④ 3 families	④ 17 families	④ 41 families ★ dominant	④ 7 families

After all four branches: UNION → deduplication at DOCDB family level → year filter 2000–2024 → 46 canonical families

The “Anti-413” Design — Why It Matters

A safeguard in how the queries are written: the pancreas filter goes INSIDE each query — never as a second step after retrieving a huge list.

Without it — the problem

- ✗ Step 1: retrieve ALL patents with B33Y 10% → hundreds of thousands of families (automotive, aerospace, electronics, food...)
- ✗ Step 2: pass that whole list back to the database as a filter → millions of characters in one request
- ✗ Result: HTTP 413 “Request Entity Too Large” — the query fails before returning anything

Same failure with a bare “%3d%”: tens of millions of families

With it — the solution

- ✓ Code condition AND pancreas keyword AND year filter combined in ONE SQL query
- ✓ The database applies all three filters on its own side and returns only the families that satisfy them all
- ✓ Result: only the ~46-family space comes back — no large intermediate list is ever created

46 families retrieved: precise, complete, no crashes

Why 46 families is a feature, not a limitation

We are looking for the intersection of two emerging fields — 3D bioprinting and pancreatic biology. That intersection is small because the field is young; the design is what makes this precision possible.

Branch Merge & Final Results



CANONICAL SET: 46 patent families · filing years 2000–2024 · 73.9% CN-origin (34 of 46)

Key technology sub-areas, as summarised in the original analysis

- Extrusion bioprinting of islet-laden hydrogel scaffolds — *most active sub-area*
- Stereolithography (SLA/DLP) for pancreatic photopolymerisation — *growing since 2018*
- 3D-printed bioartificial pancreas devices (A61F 2) — 8 families — *FTO priority*
- Bioink formulation for pancreatic tissue engineering (B33Y 70) — 3 families
- Microencapsulation & drug delivery with printed carriers — 4 families

📌 **Analyst's check:** in the result list 18 of the 46 families are 3D-printed pancreatic stents and anastomosis devices — the largest group, missing from this summary.

How to use these results

High-confidence families (2+ branches) are the closest prior art — review them first.

CN-dominant corpus (34/46): cross-validate with CNIPA.

Also: Espacenet, Google Patents, Derwent Innovation, J-PlatPat.

Dataset Validation — a Necessary Final Step

⚠ A search strategy produces a hypothesis about the patent space, not a certified complete list. Validate before any FTO decision.

1 Known-institution sanity check

Spot-check the obvious players first

Do the institutions known to work on pancreatic bioprinting appear? Major Chinese biomedical groups, US labs (MIT, Stanford, Wake Forest), European organoid groups.

Warning signal: A known-active institution is absent or under-represented

Action: Inspect its patents in Espacenet, find the missing term or code, re-run.

2 Branch 3A dominance check

Why keywords capture 89%

41 of 46 families come from text search, only 3 from the IPC branch: examiners use medical-device codes. Expected — but verify.

Warning signal: Patents mentioning “3D” and “pancreas” in unrelated contexts

Action: Manual relevance review of a 10–15-family sample; add a narrowing term if needed.

3 CN coverage verification

Critical: 73.9% CN-origin

With 34 of 46 families from China, verify that major Chinese universities (Zhejiang, Shanghai Jiao Tong, Sichuan, Tsinghua) are represented.

Warning signal: Few or no families from expected Chinese institutions

Action: Cross-validate with CNIPA or Google Patents; report the gaps (recent filings may lag in PATSTAT).

Validation turns a search result into a dataset that can support business decisions.

Reading the Results (1): the First Four Hits

results 1–4 of 46

CN101363838 (2008)

Method for detecting blood serum tumor markers

X likely false positive

The invention provides a method for detecting the totem of serum tumor. The composition difference of serum protein is analyzed by utilizing the surface-enhancement laser desorption ionization-flight time mass-spectrometric technique, and a serum protein finger print of pancreatic cancer is established...

EP2229337 (2007)

Method and apparatus for orienting articles

X likely false positive

A method for sorting and/or orienting caps using an automated capping line can comprise providing a single cap to a cap-receiving cavity defined in a body of a puck. In various embodiments, the body can be vibrated to settle and/or orient the cap...

CN102218937 (2011)

Texture processing apparatus of automobile LOGO

X likely false positive

The invention discloses a texture processing apparatus of an automobile LOGO. The texture processing apparatus comprises a production positioning mechanism, a laser printing head and a computer inserted with texture processing software...

CN102435665 (2011)

Serum tumor marker in pancreas cancer early-stage diagnosis, detection method thereof, and diagnosis model thereof

X likely false positive

The invention belongs to the field of medical diagnosis, and especially relates to a serum tumor marker in pancreas cancer early-stage diagnosis. The serum tumor marker is composed of 11 protein mass-to-charge ratio peaks...

dim3d_kw 3D, three-dimensional...

print/additive_kw print, bioprint...

pancreas_kw pancreas, pancreatic...

Highlights = keyword matches

46 canonical families, 2007–2024 · titles and abstracts as recorded in PATSTAT (machine-translated where applicable), abstracts truncated

Reading the Results (2): Hits 5–8

results 5–8 of 46

CN104873240 (2015)

Suture-free bilioenteric anastomosis stent manufactured through 3D (three-dimensional) printing and manufacturing method thereof

✓ on topic

The invention provides a suture-free bilioenteric anastomosis stent manufactured through 3D (three-dimensional) printing. The stent comprises a stent pipe and bulging columns bulging out of the outer wall of the stent pipe...

CN104905835 (2015)

3D (three-dimensional) printed stitch-free pancreatico-duodenectomy stent and manufacturing method thereof

✓ on topic

The invention discloses a 3D (three-dimensional) printed stitch-free pancreatico-duodenectomy stent made of a degradable biological material by a 3D printing technology; it comprises a stent duct and protrusive spines...

CN204931761 (2015)

Print with 3D and exempt from to sew up identical support of pancreas intestines

✓ on topic

The utility model provides a print with 3D and exempt from to sew up identical support of pancreas intestines; the support includes the support pipe and the convex protruding thorn outside the tube wall...

WO2016022830 (2014)

Three-dimensional bioprinted pancreatic tumor model

✓ on topic

Described are three-dimensional bioprinted pancreatic tumor tissue structures that are multilayer, multicellular three-dimensional structures generated with pancreatic cancer cells surrounded by cell types found in the pancreatic tumor microenvironment.

dim3d_kw 3D, three-dimensional...

print/additive_kw print, bioprint...

pancreas_kw pancreas, pancreatic...

Highlights = keyword matches

46 canonical families, 2007–2024 · titles and abstracts as recorded in PATSTAT (machine-translated where applicable), abstracts truncated

Where AI Made the Difference in Document Selection

With Claude AI, inside the TIP session

Scope

three application domains; two-condition rule:
3D printing AND pancreas → slide 37

Codes

8 IPC/CPC codes across two PATSTAT tables → slide 39

Vocabulary

4 keyword lists, each with a precise role → slide 40

Logic

4 branches that cover each other's blind spots → slide 41

Queries

drafting the SQL: one query per branch, filters
inside → slide 43

Checks

a validation plan with warning signals and actions → slide 45

The analyst's call

- ▶ Domain knowledge: is this really what the client means by “pancreatic bioprinting”?
- ▶ Reading the hits: the first four results were likely false positives (slide 46)
- ▶ Spotting what the summary missed: the stent cluster (slide 44)
- ▶ Cross-checking against CNIPA, Espacenet, known players
- ▶ Signing off a dataset fit for an FTO decision

AI widened and structured the search; the human decided what counts. *Both were necessary.*

SWOT: Making TIP Accessible Through AI

A SWOT snapshot from the EPO TIP Working Group — bridging non-programmers, patent data and generative AI (July 2026)

Strengths

- ▶ Domain experts can use plain-language questions — AI handles SQL/Python
- ▶ No-code tools (e.g. “PATSTAT Explorer”) built in days, not months
- ▶ Structured guides correct AI’s recurring, predictable mistakes
- ▶ Shows the reasoning path, not just the finished output — builds trust

Weaknesses

- ▶ AI is confidently wrong — errors are hard to catch without deep data knowledge
- ▶ Copy-pasted, unverified AI queries risk client-facing data quality
- ▶ Time-poor participants still struggle to adopt, even with AI support
- ▶ External data integration (SME size, precise geolocation) remains unsolved

Opportunities

- ▶ AI-generated lead lists and regional analyses for Patlib prospecting
- ▶ Reusable guides scale training without one-to-one teaching
- ▶ Custom AI models on EP full text as a further literacy step
- ▶ The “bridge” model is transferable well beyond patents and Patlib

Threats / Caveats

- ▶ Over-reliance on AI without human review can erode client trust
- ▶ External AI tools transmit data to third parties — never use with confidential data
- ▶ Adoption gap may widen between power users and casual participants
- ▶ Expert time is finite; material must be maintained as TIP evolves



PART IV

Looking Ahead: the Economic Value of Patents with IPScore

Three Approaches to Patent Valuation

The economic-financial methods in professional practice — the third is the one IPScore implements

1 · Cost approach

What did it cost to create?

Value = costs incurred: R&D, filing, prosecution, maintenance.

- + Simple to compute
- + Based on certain, documented figures
- Cost is unrelated to future benefits: a breakthrough may cost little, a weak invention years of R&D

Typical use: balance-sheet recognition, where only the cost incurred may be recorded.

2 · Market approach

What were comparable patents sold for?

Value = price of similar patents in past transactions.

- + The most direct method in theory
- + Grounded in real market evidence
- Patent deals are rarely public (US listed companies are an exception)
- True comparables are scarce

Typical use: only when public, truly comparable transactions can be found.

3 · Income approach

What will it earn?

Value = future economic benefits, discounted to today: $NPV = \sum B(t) / (1+r)^t$

- + The only method that measures value from use
- + Ties value to the company that exploits it
- Rests on forecasts and a risk-adjusted discount rate: assumptions must be justified

Variants: differential cash flows (with vs without the patent) — the logic of IPScore; relief from royalty — widely used, also in court, but tends to undervalue.

Value ≠ price: a valuation is a reasoned opinion based on estimates and assumptions — never a mere calculation.

After A. Casati, seminar on patent valuation · OIV, Principi Italiani di Valutazione (2012)

What Is IPScore Actually Trying to Answer?

A patent is not worth anything by itself — it is worth what it lets a company earn, or stop losing, over the years it stays in force. IPScore (EPO) turns that idea into a procedure: 40 structured questions on a 1–5 scale give back a profile of strengths and weaknesses, and a single number — the Net Present Value.

Net Present Value (NPV)

Today's value of money received later. Ten years of future cash flows, each discounted back to today and summed into one “what is this worth now” figure.

The questionnaire

40 questions in 5 sections — legal status, technology, market, finance, strategy. Every answer option is written out, so two people scoring the same patent reach the same numbers.

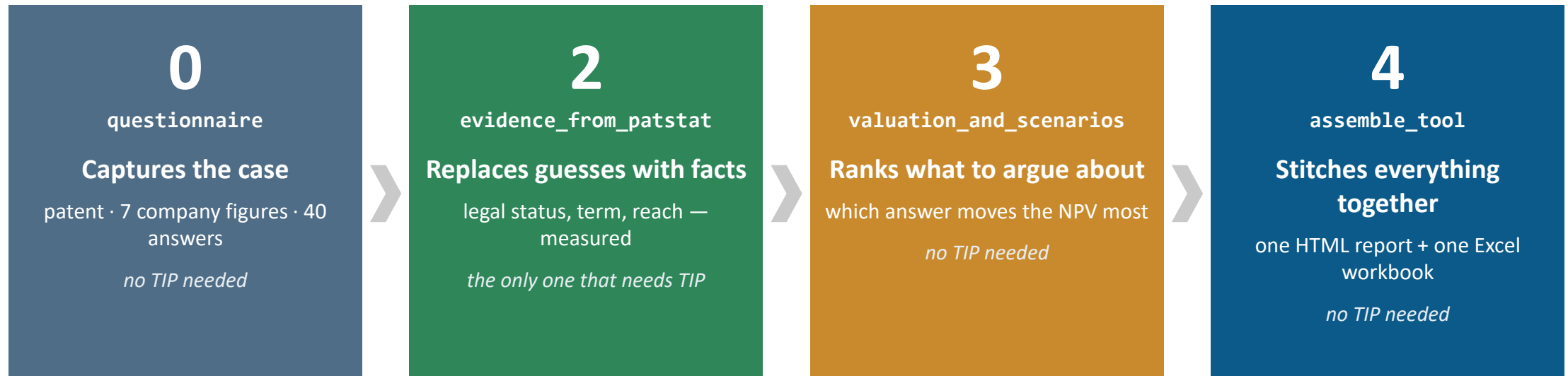
Built for non-specialists

No balance-sheet or corporate-finance expertise required: the user chooses among written-out options, the financial mechanics run inside the model. A fast, structured first estimate.

In practice: a valuation a Patlib adviser can run together with a client — PATSTAT supplies the legal facts, the client the business figures.

Model: EPO IPScore 3.01 · engine & course material: Arne Krüger (mtc.berlin), TIP4PATLIBS · scenario analysis after R. Priore's NPV Target Planner

The Real-Case Chain: Four Notebooks, One Argument



1 · the_model — builds and verifies the calculation engine against the EPO's three test patents. A standalone engine check on the shipped example, not a step of a real case.

Why this split matters

Notebook 4 always builds a complete report. Skip 2 and 3 (no time, no TIP access) and the report still says honestly what is missing — “0 measured · 40 judgement”. Add them and the same report gains verified facts and a sensitivity ranking.

Model: EPO IPScore 3.01 · engine & course material: Arne Krüger (mtc.berlin), TIP4PATLIBS · scenario analysis after R. Priore's NPV Target Planner

Notebook 0: Entering a Case Without Writing Code

Two ways to enter the data

Option A · the clickable form

Open the HTML questionnaire, fill in the patent, the 7 company figures and the 40 questions, click “Download my answers”, drop the file into the upload folder. The client can fill it in directly.

Option B · edit in the notebook

The same fields as plain Python values to edit and run — fastest when the analyst works in the notebook.

A live form inside the notebook was tried and dropped: it never synced back to the kernel on this platform. A plain file hand-off cannot fail that way.

What goes in

The patent

publication number — the evidence step looks it up in PATSTAT

7 company figures

turnover · direct and indirect costs · depreciation and its period · share of turnover in the business area · discount rate

40 first-pass answers

5 sections, each option written out on a 1–5 scale

Output: questionnaire.json — notebooks 2, 3 and 4 read it automatically, without editing a line of code.

Notebook 0: Entering a Case Without Writing Code

TIP4PATLIBS – IPScore questionnaire

Answer these once for a real patent, then download your answers and hand the file back to whoever is running the PATSTAT valuation — nothing here is sent anywhere or computed into a value. That happens afterwards, on TIP.



The patent

Six fields identify the patent. The family ID is what notebook 2's PATSTAT queries key off once it runs on TIP; the rest is display text carried through the reports and the tool.

Publication number

e.g. EP1234567B1

DOCDB family ID

what notebook 2's PATSTAT queries key off

Applicant

Technical field

Title

Plain-language title

a one-line, non-technical description

[← Back](#)[Next →](#)

TIP4PATLIBS – IPScore questionnaire

Answer these once for a real patent, then download your answers and hand the file back to whoever is running the PATSTAT valuation — nothing here is sent anywhere or computed into a value. That happens afterwards, on TIP.



A · Legal status

Pick the answer that fits each question. Every answer starts on a plausible default — change any of them, or leave them as they are.

A1 — Patent status

What is the status of the patent?

- ☐ 1 – Patent not yet applied for
- ☐ 2 – Patent application filed
- ☐ 3 – Novelty search and patentability evaluation completed
- ☒ 4 – Patent granted
- ☐ 5 – Opposition period expired

why this is asked

A2 — Legal position of strength

What is the patent's legal position of strength?

- ☐ 1 – No novelty search
- ☐ 2 – Quick and dirty' search (simple database search) performed
- ☐ 3 – National office novelty search or similar
- ☒ 4 – International novelty search
- ☐ 5 – Novelty search and infringement search

why this is asked

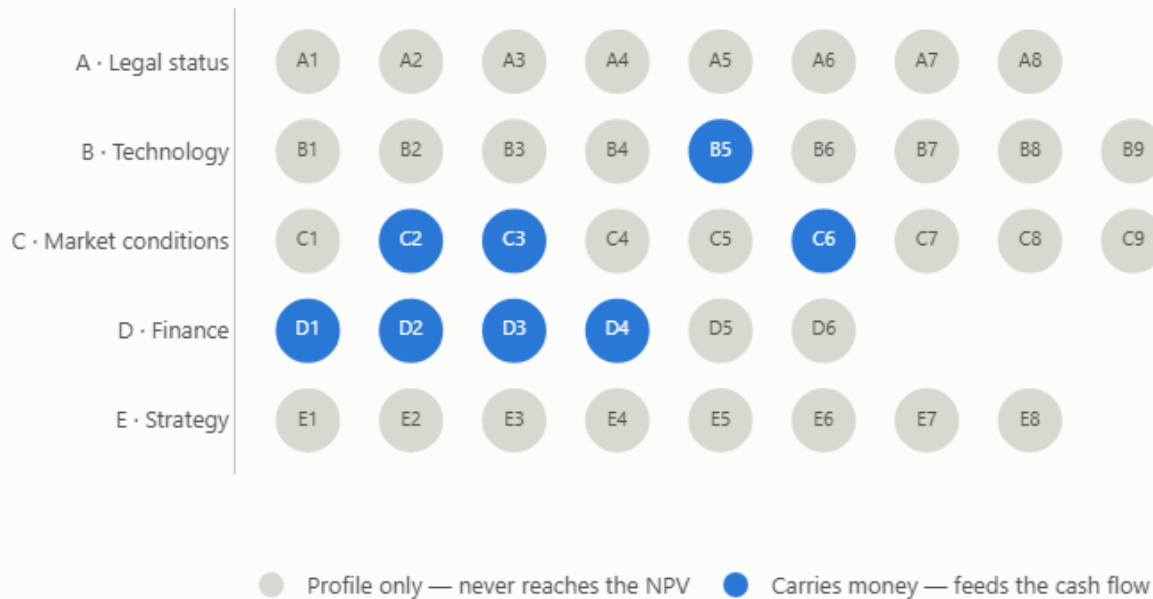
A3 — Patent term remaining

For how long is the patent still valid?

- ☐ 1 – Patent has 0-2 year term remaining
- ☐ 2 – Patent has 2-4 year term remaining

40 Questions — but Only 8 of Them Touch the Money

Only 8 of the 40 IPScore questions reach the Net Present Value



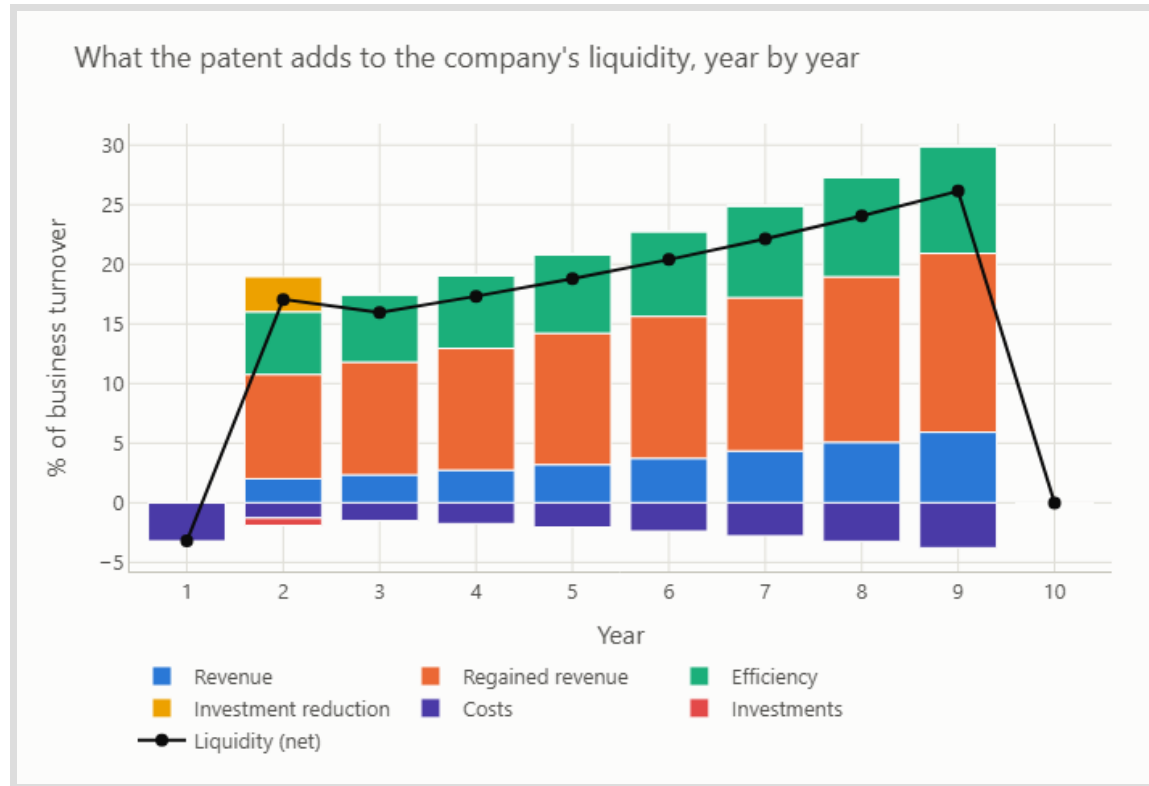
5 sections, 40 questions, 200 points max

- A · Legal status** granted? term left? geographic reach?
- B · Technology** novelty, superiority, fit with the company
- C · Market conditions** is there a market, is it growing?
- D · Finance** development, production, equipment cost
- E · Strategy** does it serve the company's actual plan?

Blue = the 8 “OEK” questions (B5, C2, C3, C6, D1–D4): each answer maps onto a real economic quantity through a fixed EPO table. Grey = profile only.

Why the engine can be trusted — the acceptance test: the EPO workbook carries three test patents with pre-computed NPVs (one positive, one barely positive, one negative). The Python engine must reproduce all three exactly before computing anything else — it once caught a real off-by-one bug.

How the 8 Answers Become One Number



Ingredient 1 — the company (7 figures)

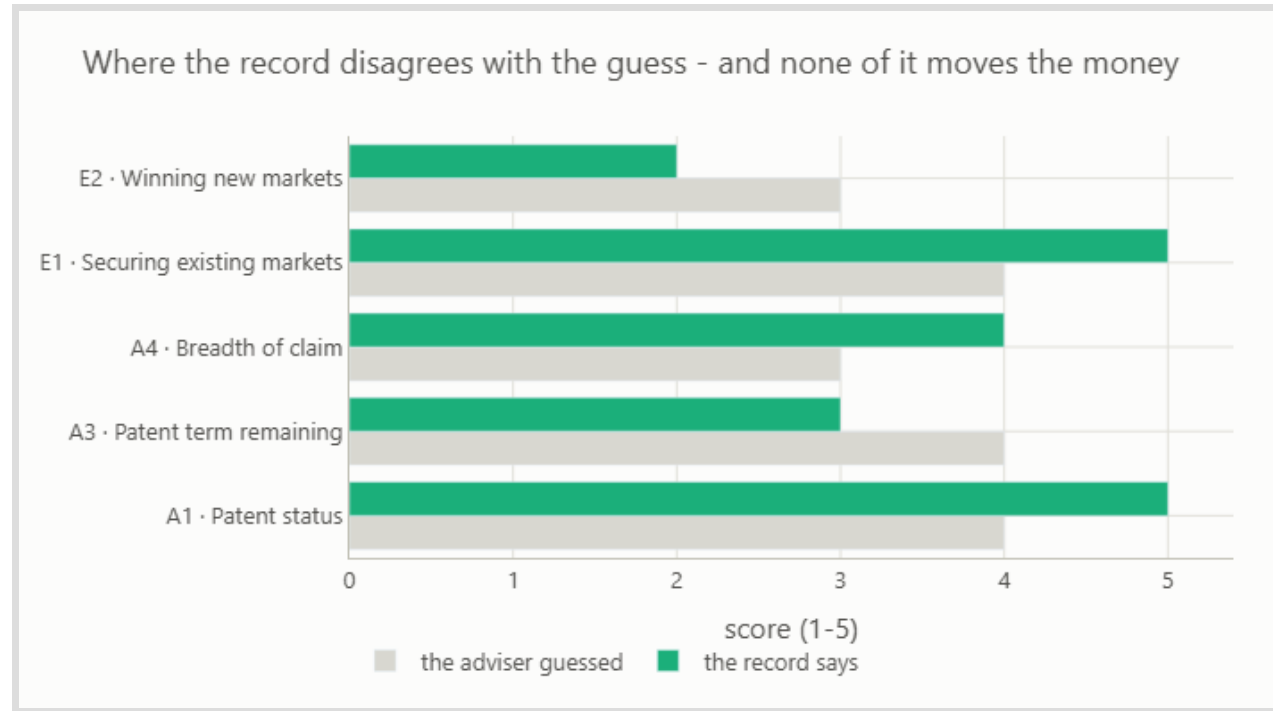
Turnover, direct/indirect costs, depreciation and its period, share of turnover in this business area, discount rate. The 8 answers describe what the patent changes; these describe the company it changes it for.

Ingredient 2 — the cash flow (6 components)

+ revenue + regained revenue + efficiency + investment saved – costs – one-time investment. Each year's total, discounted to today and summed over ten years = the NPV.

Two classic mistakes the notebook shows: ① entry and exit years are fractional — “2.5 years to market” means half a year of revenue in year 3; ② investments happen once, not every year — spreading them over ten years can flip a positive value into a negative one.

PATSTAT: the Record Overwrites the Guess



11 of 40 answers are checkable

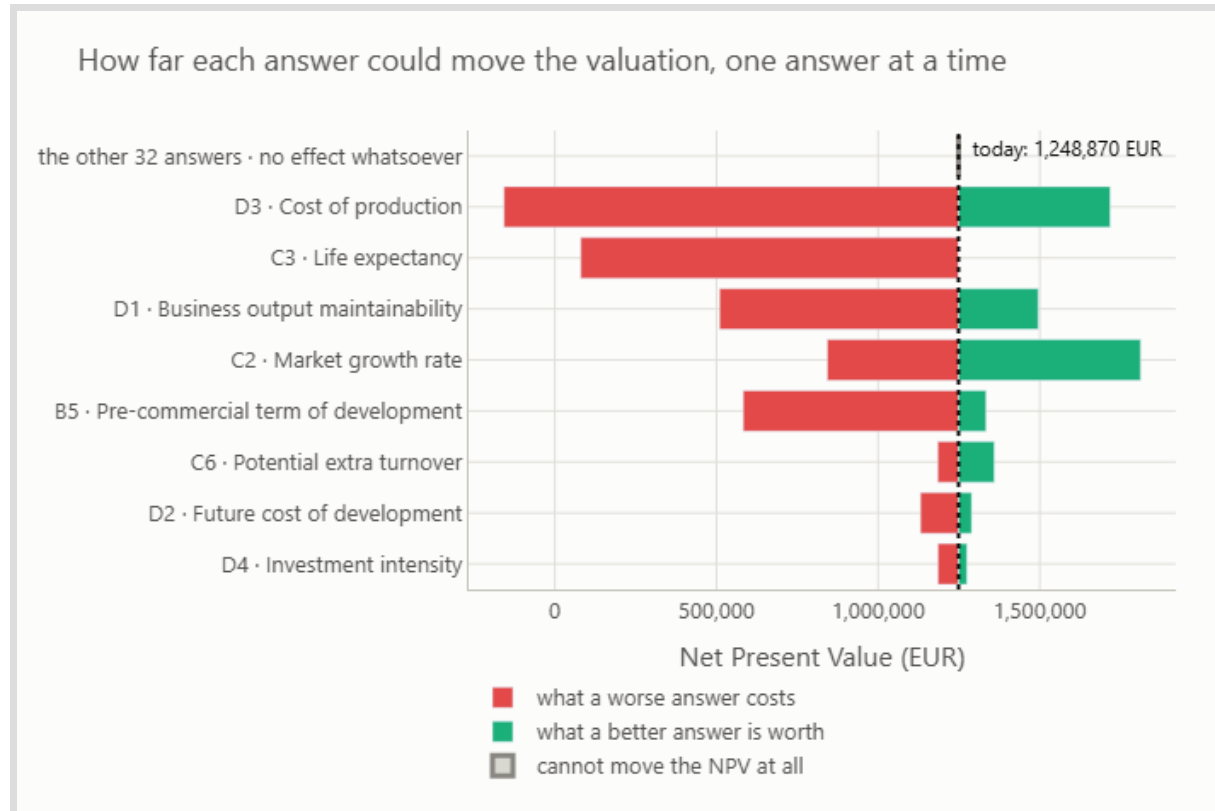
in the example, 5 of them moved: A1 status, A3 term, A4 claim breadth, E1, E2

- ▶ **Wrong legal-status information is simply overwritten** by the PATSTAT record — each “measured” answer carries a date and a legal-event code.
- ▶ **A revoked or lapsed patent is worth nothing**, whatever the market forecast says.
- ▶ **Only for the same patent family:** change the patent without re-running this step and the report falls back to the guesses — and says so.

None of the 11 checkable answers is among the 8 that carry money.

PATSTAT does not move the euro figure: it decides whether that figure rests on true facts and can be audited.

Of the 8 Answers That Matter, Which Is Worth Arguing About?



Vary one lever at a time: each of the 8 money answers from 1 to 5, everything else held still — 40 quick valuations.

1

Caveat, stated once

Levers interact, so widths don't add up: the tornado ranks levers, it does not decompose the NPV.

2

Width ≠ room

A lever can be the widest bar and still offer nothing if today's answer is already the best (C3: all red).

3

The realistic version

Notebook 3 also draws the one-step tornado: what one grade better or worse is worth — that is what to show a client.

A second, independent view of the same fact: the 32 questions with no money effect appear here as bars of exactly zero width. *Output: one ready-made report section — “which lever moves it?”*

The Final Report: a Fixed Spine, Plus Whatever Arrived

The spine — always present

- 1 • The verdict — NPV, score, provenance
- 2 • The patent and the company
- 3 • The profile — strengths, weaknesses
- 4 • How much can data reach?
- 5 • The eight answers that carry money
- 6 • The ten-year cash flow
- 7 • All forty answers, with provenance



Section 3: the profile radar — every valuation gets one. It shows where the patent is strong, never how much it is worth.

Slotted in, if present

From notebook 2: a better answer set — updates sections 1, 4 and 7, no new section.

From notebook 3: one extra section — the sensitivity ranking.

Missing either? Notebook 4 still runs and states exactly what is missing.

Output: one self-contained HTML page + one auditable Excel workbook, opened inside TIP.

The Final Report: a Fixed Spine, Plus Whatever Arrived

TIP4PATLIBS — What is this patent worth?

Method for detecting and characterising a microorganism · valued with the EPO IPScore 3.01 model · engine verified against the EPO workbook's three test patents

The verdict The patent and the company The profile How much of this valuation can data reach? What the record actually says The eight answers that carry money The ten-year cash flow Which lever actually moves the number? All forty answers

The verdict

Net Present Value of the patented technology

1,248,870 EUR

over ten years, discounted at 12%

139 / 200 IPScore points

-0.39 average risk

+0.63 average opportunity

How much of this number is evidence?

2 measured — a PATSTAT fact decided it

6 informed — data narrowed it, a person chose

32 judgement — expert opinion, nothing else

Answer set: measured against PATSTAT for EP3074539B1 by 2_evidence_from_patstat.ipynb. Eleven of the forty questions are reachable by a PATSTAT query — three strongly — and notebook 2 is what turns those into facts. **None of the eleven is one of the eight that carry money**, so measuring them sharpens the picture of the patent without moving this number by a cent. Read a valuation whose answers are judgement as a structured opinion, not as a measurement.

The patent and the company

The patent is real and public. The company figures are not - see the warning below.

FIELD	VALUE
Title	Method for detecting and characterising a microorganism
IPC Class	A01K 67/02

Output: one self-contained HTML page + one auditable Excel workbook, opened inside TIP.

IPScore: the Sentences Worth Keeping

A real case starts at notebook 0

Fill the questionnaire once; notebooks 2–4 read exactly what was entered. The engine demo is an optional, separate check.

Only 8 of 40 answers move the NPV

The other 32 shape the profile, the risk map and the conversation — and change the euro figure by exactly nothing.

PATSTAT checks 11 answers — none of the 8

The evidence layer makes the record true (status, term, reach) and the valuation auditable, without moving it by a cent.

The report always says what is missing

Notebooks 0 and 4 alone give a complete, honest report: “0 measured · 40 judgement”. Add 2 and 3 for facts and a sensitivity ranking.

Model: EPO IPScore 3.01 · engine & course material: Arne Krüger (mtc.berlin), TIP4PATLIBS · scenario analysis after R. Priore's NPV Target Planner

A New Dimension for Patent Landscapes: Economic Value

What a landscape already maps

Technology IPC/CPC, co-occurrence, clusters

Geography filings, families, reach

Time trends, periods, waves

Influence forward and backward citations

Legal status in force, lapsed, opposed, revoked

+ Economic value NPV of each live family

How, in principle

- 1 **PATSTAT** — select the in-force families of every player in the technical field — legal status from the record, not from assumptions
- 2 **IPScore** — value each family: 8 money-carrying answers + the owner's 7 company figures
- 3 **Aggregate** — sum the family values into a portfolio value per player
- 4 **Rank** — order the players by the value of their live portfolio — not by patent count

Counting patents measures activity; valuing them estimates economic strength. *A research direction, not yet a routine deliverable.*

Feeding the Model: What Is Public, What Stays Hidden

MEASURED

PATSTAT / TIP

- ▶ Legal status and legal events: lapses, oppositions, revocations
- ▶ Remaining term
- ▶ Geographic reach of the family
- ▶ Applicant footprint and portfolio size

11 of the 40 answers — wrong inputs are overwritten by the record

RETRIEVABLE

company databases (e.g. Orbis), annual reports

- ▶ Turnover
- ▶ Direct and indirect costs
- ▶ Depreciation and its period
- ▶ Discount rate: a sector benchmark rather than a disclosed figure

Most of the 7 company figures — public for many companies, patchy for private SMEs

HIDDEN

not disclosed, or deliberately concealed

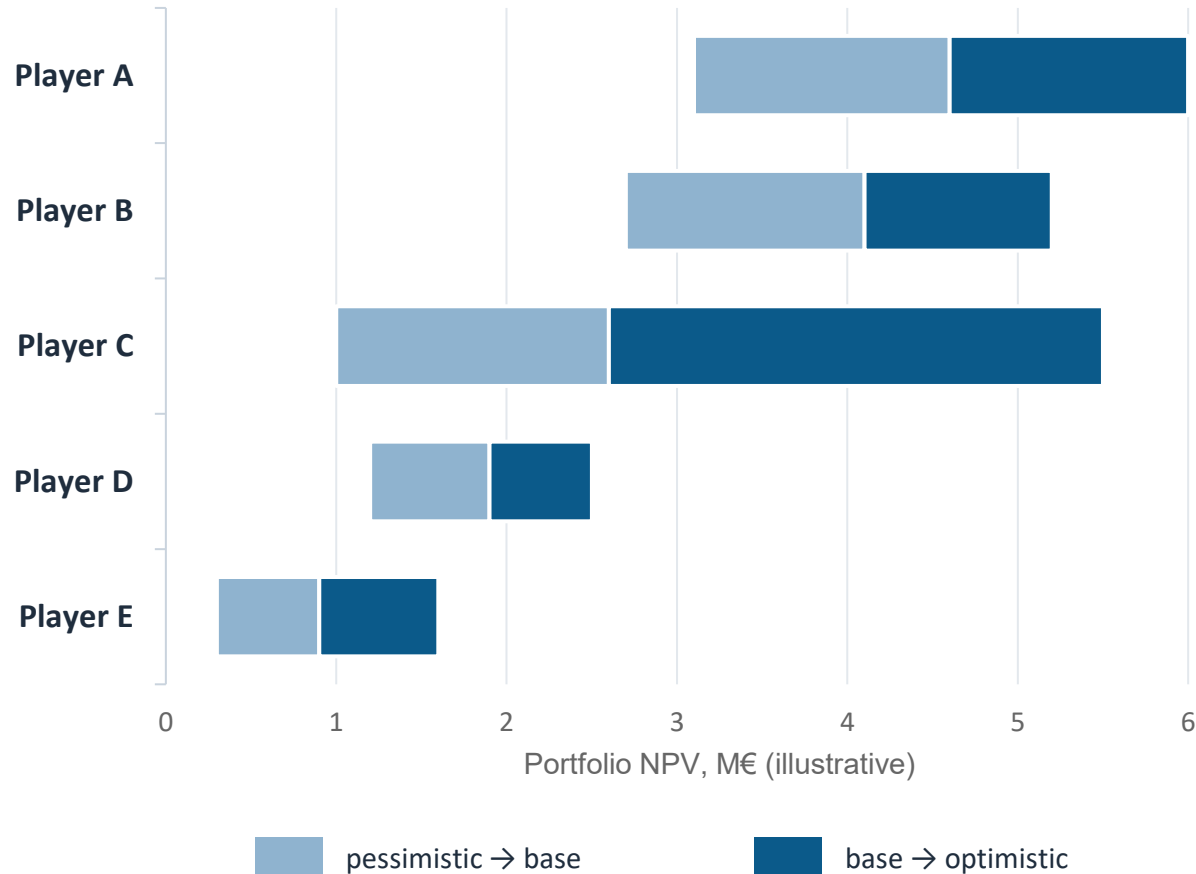
- ▶ Share of turnover generated by the patented technology
- ▶ Market growth and product life as the company sees them
- ▶ Development and production costs of the specific product

Several money-carrying answers — they can only be explored as scenarios

Where data stop, scenarios start: run IPScore over pessimistic / base / optimistic values of the hidden inputs → next slide.

From a Single Number to Scenario Ranges

ILLUSTRATIVE — hypothetical players, invented figures



The boundary between the two shades marks the base case.

How to read it

Each bar: the portfolio value across pessimistic → optimistic values of the hidden inputs.

Robust conclusions: only where ranges do not overlap: in every scenario A and B are worth more than D and E.

Player C: could rank anywhere from first to last — its value hinges on undisclosed data. The tornado logic (slide 59) tells which input to investigate first.

Method: scenario analysis after the NPV Target Planner; inputs from PATSTAT, company databases and explicit assumptions.

Conclusion

- ▶ Patstat/SQL already provides the quantitative backbone of a credible PLR
- ▶ TIP does not replace it: it extends it, in a single session, beyond the structural limits of SQL alone
- ▶ The result is a continuous workflow: from query to interactive dashboard
- ▶ Working faster is not just convenience: it shifts analyst time from data handling to search-strategy refinement

...and What This Extended Session Adds

AI widens the search, the analyst decides

In the bioprinting case Claude shaped scope, codes and keyword lists. Relevance review and validation stayed human.

TIP produces text as well as charts

Narratives drafted from notebook outputs speed up reporting — and every sentence still needs a reader who knows the data (slide 34).

The reluctance towards TIP is largely unfounded

Plain-language questions, reusable guides and AI-assisted code lower the entry barrier. The real caveats are verification and confidentiality.

Patent value can become a landscape dimension

IPScore gives non-economists a structured NPV; PATSTAT keeps the legal facts honest; hidden company data call for scenarios, not single numbers.

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- ▶ EPO, Technology Intelligence Platform (TIP) — tip.epo.org
- ▶ Chart examples: DEEPTech-Russo, DEEPTech-Novac, DEEPTech-FlowNano project folders

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- ▶ Case studies: DEEPTech 3D Bioprinting – Pancreas search strategy (PATSTAT PROD, June 2026); Antibiotic Resistance Patent Landscape, TIP demo report (interactive HTML)
- ▶ EPO TIP Working Group, SWOT on making TIP accessible through AI (July 2026)
- ▶ A. Casati, seminar on patent valuation (vademecum «Valutazione dei brevetti»); OIV, Principi Italiani di Valutazione (2012)

Thank You

Questions?



BACKUP

For Questions: How the IPScore Notebooks Pass Files

How the Files Actually Pass Between Notebooks

Shared source of truth, read by every notebook: `worked_example.json` (shipped example) + `ipscore_spec.json` (the EPO's 40 questions & 8 value tables) + `ipscore_kit.py` (the engine)

questionnaire.json — written by notebook 0; once it exists, it is preferred over the shipped example



1 • the_model — builds & verifies `ipscore_kit.py`, the engine every step imports; runs on the shipped example only.

Final output: `ipscore_valuation.html` + `ipscore_valuation_data.xlsx` — opened inside TIP with `open_html()`

One-way arrows: nothing flows backward — notebook 4 only reads, never edits; each notebook can run in isolation.