Competitive Analysis of IP Professionals Based on Patent Data

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IP Service Industry

**IP service provider** – is a company that provides IPR-related services to external customers.

**IP Service Industry** is the (global) group of IP service providers.

IP Service Industry established within the last decades, due to emerging driving forces:

- Patents (and IPRs) became a strategic asset class (defensive and offensive purposes, IP financing, etc.)
- Organisations opened up their innovation processes (*open innovation*)
- Specialisation of IPR-related knowledge
- Internationalisation of the companies’ operations

Yet, how does the IP Service Industry look like?

References:

IP Industry Base (IPIB)

Transparency over the IP Service Industry by providing company profiles for each IP service provider.

(http://s.fhg.de/ipib)

IPIB is free. You can simply create an account.

The IPIB aims to support SMEs (and other organisations with limited IP resources) to identify appropriate IP service providers.

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IP Industry Base (IPIB)

The IP Industry Base is continuously updated and informs the user about changes via live feed and email update alerts.

http://s.fhg.de/ipib
The Intellectual Property Services Classification (IPSC) defines types of business activities that are executed by companies active in the IP services market.

The six main categories of the IPSC are:

100 Legal Services  
200 IP Consulting  
300 Matchmaking and Trading  
400 IP Portfolio Processing  
500 IPR-related Financial Service  
600 IP-related Communication Service

All main categories are subdivided into sub-categories (38) and sub-sub-categories (53).

Based on the tagging, the service providers become mutually comparable. IPSC is the result of an extensive empirical research process with in-depth feedback processes from academia and industry.
IP Service Classification (IPSC)

Tagging the Companies

All company profiles of IP Service Providers in the IPIB are manually tagged in function of the services they offer to external clients.

Currently 4883 companies are tagged.

Number of companies offering at least one service within the six main categories:

100 Legal Services - 3473
200 IP Consulting - 1011
300 Matchmaking and Trading - 1226
400 IP Portfolio Processing - 1233
500 IPR-related Financial Service - 179
600 IP-related Comm. Services - 620

Shortcomings:

- Subjective assessment
- Based on externally available data (marketing material, website, or self-assessments of the service providers)
- Service Portfolios evolve in time

References:


Example: CBDL
https://ipib.ci.moez.fraunhofer.de/companies/cbdl-patenanwalte

Services

111 Patent and Trademark Search
112 Patent Drafting
113 Application and Renewal of IPR
121 Due Diligence
122 IPR Transaction Support
131 Non-judicial Proceeding
132 Judicial Proceeding
133 Arbitration and Mediation
211 Legal Quality Assessment
264 Collaboration with Customs
430 IP Portfolio Administration

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The Structure of the IP Service Industry

The IPIB aims to
- be (mostly) complete for Europe,
- reveal a significant part of the US market,
- indicate the structure of important spots in Asia (like Singapore) and
- be a proxy for the situation of the IP Service industry in the rest of the world.
The Structure of the IP Service Industry with Expertise in IPR-Related Financial Services.

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IP Service Classification (IPSC)

Distribution of service providers (454) in Munich + 25km

Distribution of service providers (304) in Greater London

Distribution of service providers (44) in Sofia + 25km

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Data Quality within the IPIB

IP Service Industry is extremely heterogeneous, globally distributed and evolving continuously.

The IPIB can never be complete, but implements a continuous data quality assurance treatment.

For completeness, we implemented the following measures:

- Each company profile has a „Does this profile need an update“ box. All update requests from this box are immediately attended to by the editorial team.
- Users can simply propose new companies once they are missing a service provider.
- Whenever we observe a new patent agent in the patent literature, we add it as a service provider to the database.
- We use our Data Quality Assessment Framework for continuously measuring the health of the database and directing the work of the editorial team.

For traceability we implemented the following measures:

- Each fact can be augmented with an URL for the information source.
- Most of the facts can have a temporal validity (like locations, employments, etc.)
The patent literature provides additional information about patent agent firms and patent attorneys.

We integrate and analyse the patent data continuously through weekly updates from the EPO.

For this purpose we use our Smart Data Processing Facility.

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Customer Profile of Patent Agent Firms

Patent agent firms are working on patents (as disclosed in the literature). For each patent we know the applicant, which is the customer of the patent agent firm.

→ The customer profile reveals the structure of the customer base for each patent agent firm.

Application by our users: Are the „average“ customers of my favourite patent agent firm comparable to me?

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https://ipib.ci.moez.fraunhofer.de/companies/schoppe-zimmermann-stockeler-zinkler-and-partner
Activity Profiles of Patent Agent Firms

Patent agent firms are working on patents (as disclosed in the literature). For each patent we know the technology profile (IPC classes).

→ Activity Profiles reveal the activity of a patent agent firm in a specific IPC class

→ The Expertise tab in the IPIB compares these activities to the whole market.

Application by our users: Which patent agent firm in my region is most active in A21?

https://ipib.ci.moez.fraunhofer.de/companies/cbdl-patentanwalte

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Activity is not Specialisation

Each column is a patent agent firm.
Each row is an IPC class.
Each cell shows the activity of the patent agent firm in the IPC class.

**Data:** EPO Patent Applications from 2014 and 2015

Which company is compared to its own activities and the rest of the market really specialised in A61?
RSI Specialisation

The RSI specialisation allows to generate idiotypic and dichotomous specialisation profiles for each patent agent firm.

The RSI specialisation is based on the theory of comparative advantage and the ARCA measure.

A specialisation profile of a patent agent firm is the set of all IPC classes, in which the firm is significantly more active than expected from its own activity profile and the whole market activities.

We developed the RSI specialisation measure which creates

Idiotypic profiles: A firm’s specialisation profile should be informed by the full market structure and the individual situation (strength of all IPC classes, activities of the competitors, activities of the patent agent firm).

Dichotomous profiles: For each IPC class and each patent agent firm is individually decided whether it belongs to the firm’s specialisation profile or not (no fixed thresholds).

References:


## RSI Specialisation

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patent Assignments:</td>
<td>284,442</td>
</tr>
<tr>
<td>Specialisations in total:</td>
<td>5,737</td>
</tr>
<tr>
<td>Minimal Nbr of Specialisations:</td>
<td>1</td>
</tr>
<tr>
<td>Average Nbr of Specialisations:</td>
<td>5.89</td>
</tr>
<tr>
<td>Median:</td>
<td>6</td>
</tr>
<tr>
<td>Maximal Nbr of Specialisations:</td>
<td>17</td>
</tr>
</tbody>
</table>

**Agents ordered by Total Number of Patent Assignments**

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RSI Specialisation built into IPIB

Specialisation profile of CBDL (weekly updated)

Profile of EP17165895

Specialization Profile

Compared to all other patent agents in the market Cabinet Beau de Loménie (CBDL) are the most specialized in:

- B60 VEHICLES IN GENERAL
- F01 MACHINES OR ENGINES IN GENERAL; ENGINE PLANTS IN GENERAL; STEAM ENGINES
- F02 COMBUSTION ENGINES; HOT-GAS OR COMBUSTION-PRODUCT ENGINE PLANTS
- F03 MACHINES OR ENGINES FOR LIQUIDS; WIND, SPRING, OR WEIGHT MOTORS; PRODUCING MECHANICAL POWER OR A REACTIVE PROPULSIVE THRUST, NOT OTHERWISE PROVIDED FOR
- F04 POSITIVE-DISPLACEMENT MACHINES FOR LIQUIDS; PUMPS FOR LIQUIDS OR ELASTIC FLUIDS
- F16 ENGINEERING ELEMENTS OR UNITS; GENERAL MEASURES FOR PRODUCING AND MAINTAINING EFFECTIVE FUNCTIONING OF MACHINES OR INSTALLATIONS; THERMAL INSULATION IN GENERAL

Applicant

Toyota Motor Corporation (Toyota Jidosha Kabushiki Kaisha)
Technology Company

Attorney

Didier Gérard André Intès
operating since 1980
Cabinet Beau de Loménie (CBDL)
Headquarters in Paris, Düsseldorf and offices active in Legal Services, IP Consulting and IP Portfolio Processing
proven expertise in 7207 IPC areas

Specialization

This patent has the IPC combination B60 (VEHICLES IN GENERAL) and F02 (COMBUSTION ENGINES; HOT-GAS OR COMBUSTION-PRODUCT ENGINE PLANTS). Cabinet Beau de Loménie (CBDL) is specialized in the combination B60 and F02. We found, that Kuhnen & Wacker, Weickmann & Weickmann PartmbB, Beetz & Partner, Bockermann Röss Griepenstroh Osterhoff, Winter Brandl Fürniss Hüblner Röss Kaiser Poite Partnerschaft mbB and 26 others are specialized in all of these IPC classes as well. For a similar patent, they might be a good choice.
Patent Attorneys - a rarely Charted Species

Patent Attorneys providing a wealth of operational know-how and relationship capital into the IP market and the innovation system.

- ~ 10.700 patent attorneys are currently registered with the EPO
  Source: https://www.epo.org/applying/online-services/representatives.html
- worldwide more than 25.000 patent attorneys observable
  Source: https://www.patent-pilot.com/

Their role as intermediaries is hardly investigated (Li et al. 2015; MacDonald, Lefang 1998).

In-house patent law expertise in technology companies is a significant predictor of the firms patenting performance (Somaya et al. 2007).

Specialisation of in-house legal resources and the firms’ R&D (Somaya et al. 2007) capabilities as a facilitating moderator for this positive impact.

A comprehensive and current dataset about activities and mobility of patent attorneys on individual level, and thus their career paths, is missing.

Our Goal: Setting up a reliable database of European patent attorney careers and stimulate research on the intermediating function of patent attorneys.
Example 1:
Typical Patterns of Career Paths of Patent Attorneys

Change from Large Law Firm to a Boutique Law Firm

Example Case: https://ipib.ci.moez.fraunhofer.de/people/volker-hamm

Volker Hamm since 1999
Partner at Maiwald
established in 2016
IP Boutique Hamm & Wittkopp

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Example 2:
Typical Patterns of Career Paths

A career (mainly) within in the industry.

Example Case:
https://ipib.ci.moez.fraunhofer.de/people/tim-bast
Creation of the Data Set
(http://s.fhg.de/ipib)

EPO List of Representatives (by End of 2016)
https://www.epo.org/applying/online-services/representatives.html

Example:

<table>
<thead>
<tr>
<th>Coward, Bjarne G. (NO)</th>
<th>Tel.:  +47 22 957440</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protecto IP Consultants AS</td>
<td>Email: <a href="mailto:mail@protector.eu">mail@protector.eu</a></td>
</tr>
<tr>
<td>Oscarsgate 20</td>
<td>Fax:  +47 22 957450</td>
</tr>
<tr>
<td>NO-0352 OSLO</td>
<td>URL:  <a href="http://www.protector.eu">http://www.protector.eu</a></td>
</tr>
</tbody>
</table>

For each EPO application published since 2012

Example:

<table>
<thead>
<tr>
<th>Vertreter</th>
<th>Coward, Bjarne G. , et al</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protecto IP Consultants AS Oscarsgate 20</td>
<td>[2013/30]</td>
</tr>
<tr>
<td>NO-0352 Oslo / NO</td>
<td></td>
</tr>
</tbody>
</table>

Bjarne Coward

Representative before EPO since (at least) 2013/30 until now

agent

EP11825500

agent

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Data Set of Patent Attorney Careers

Some descriptive statistics: (from 2012 to date)

~ 10,686 attorneys from EPO db
~ 14,400 Key Employments from EPO data
~ 15,800 Persons in total
~ 18,700 Employment Relationships in total

Our current dataset contains the following datapoints for each patent attorney (harmonised on individual level) that acts as representative before the EPO:

- Name of the patent attorney
  - Different spellings are harmonised
- Each company, to which the attorney was affiliated since 2012, according to the “agent” information in EPO patent applications
  - Challenge: not for all individuals disclosed in patent data
  - continuously updated
- Each company, to which the attorney was affiliated according to the database of professional representatives provided by the EPO (by End of 2016)
- Each EPO patent applications the attorney has worked on (if disclosed by the patent firm) since 2012 according to the “agent” information in EPO patent applications, plus the following data for each patent application:
  - IPC classes as a proxy for the technological expertise of the patent attorney,
  - technology companies acting as applicants (not fully harmonised) representing the customer of the attorney, and
  - status of the patent application, as a proxy for the success of the patent attorney
  - continuously updated
Further Research Projects

EPO Project


Objectives:

• Comprehensive (continuously updated) dataset with the career paths of all patent attorneys acting as representatives before the EPO within the last ten years, published anonymised as open data.

• Gap-filled dataset, which is the dataset completed with synthetic data about the career steps missing in the original dataset, and published anonymised and regularly updated as open data.

• Identification of patterns in the patent attorneys’ career paths, which do have a positive effect on innovation ecosystem.

Hypothesis generation, quality assurance and gap identification will be conducted through active involvement of the IP service provider community and open source data.
Summary

Take Home Messages:

1. IPIB brings transparency to the IP service market.  
   *It helps you to find the right IP service provider.*

2. The IPSC is a full classification of all services provided by the IP service industry.  
   *It helps you to learn which services do exist on the market.*

3. The IPIB can be used to investigate the IP service industry in detail, especially the patent agent firms, in example with the RSI specialisation.  
   *You can find market gaps (there are no IP-related financial services in Bulgaria) or you can find all patent agent firms being specialised in A61 in Sofia.*
THANK YOU FOR YOUR INTEREST.

QUESTIONS and COMMENTS are highly appreciated.

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Kazimir.Menzel@uni-jena.de
RSI -Spezialisierung

Einführung einer Transformations- und Schwellwertfunktion zur Berechnung idiotypischer, dichotomer Spezialisierungsprofile.

**Transformationsfunktion** zur Umrechnung der Anzahl der Aktivitäten in ein Maß für die Spezialisierung. Basiert auf ARCA, einem Maß für den Komparativen Vorteil (Hoen, Oosterhaven 2006).

\[
\text{RSI}_{a,c} = \frac{A_{a,c}}{\sum_{c=1}^{n} A_{a,c}} - \frac{\sum_{b=1, b \neq a}^{m} A_{b,c}}{\sum_{b=1, b \neq c}^{m} \sum_{c=1}^{n} A_{b,c}}
\]

Normiert auf [-1,1], wobei 0 dem Durchschnitt der Mitbewerber entspricht, positive und negative Werte über- bzw. unterdurchschnittliche Aktivität anzeigen.

**Schwellenwertfunktion** nutzt die regelmäßigen Eigenschaften des positiven Bereiches der firmenspezifischen Verteilung des RSI-Werts aus.

\[
\text{RSI specialisation} = \begin{cases} 
\text{specialised} & \text{RSI}_{a,c} > \sigma(\text{RSI}_a) \\
\text{not specialised} & \text{RSI}_{a,c} \leq \sigma(\text{RSI}_a)
\end{cases}
\]

Legende: a und b sind Patentanwaltsfirmen; c ist eine IPC-Klasse und A ist die Matrix mit den Aktivitätsprofilen aller Firmen (Marktstruktur), δ Standardabweichung

Naiver Ansatz, ENF-Spezialisierung & RSI-Spezialisierung im Vergleich

**Naiver Ansatz:** Die zehn IPC Klassen mit den meisten Aktivitäten der Firma auswählen

**Absolute Spezialisierung (ENF):** Die n Klassen mit den meisten Aktivitäten der Firma auswählen, wobei n durch ENF bestimmt wird

**RSI-Spezialisierung:**
Sortierung der Klassen nach RSI-Wert und Auswahl nach Standardabweichung

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Current Limitations of the Data Set of Patent Attorney Careers

(http://s.fhg.de/ipib)

- **Employer Companies**
  - Only differentiated between “Technology Company” and “IP Service Industry”, but not between “Corporate”, “Mid Size”, etc.

- **Customer Companies**
  - Customer Companies are not completely harmonised, hence customer profile of the patent attorneys can’t be analysed

- **EPO list or Representatives**
  - Regular updates of this list (new subscriptions, deletions) are not represented in the data set

- **Timeline (Career Steps)**
  - Estimation of time span for each career step based on the patent data is not well elaborated

- **Missing Career Steps**
  - Career Steps which can’t be inferred from patent data (i.e. change to IP Management practice)

- **Geographical Attribution**
  - Geography of the office is of non-warranted quality
  - Employment associations are created to companies, not to offices

- **Quality Assurances**
  - Data is not cross-checked with alternative sources, like LinkedIn