I hope you are doing well.
Patent quality is an international priority

“Only high-quality patents and processes serve the needs of inventors, innovation and society alike”
- EPO Annual Report 2014
The difficulty in ensuring patent quality are not new

"I know well the difficulty of drawing a line between the things which are worth to the public the embarrassment of an exclusive patent, and those which are not." – Thomas Jefferson, 1813
But recent developments highlight the cost of low-quality patents

DataTreasury Patents Nixed By PTAB In AIA Review

By Matthew Bultman
And the question of when and how broadly quality filters should be applied

<table>
<thead>
<tr>
<th>Stage of Patent Lifecycle</th>
<th>Quality Mechanisms</th>
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This presentation applies a comparative lens to patent quality

*Rating of the quality of patents issued by each of the five largest IP offices*

*Intellectual Asset Management Magazine benchmark survey 2015 among 650 patent professionals*
Bearing in mind that there are many differences between the European and US systems…

<table>
<thead>
<tr>
<th>Factor</th>
<th>US</th>
<th>Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examiner Pay</td>
<td>US civil service grades</td>
<td>Double US levels, limited taxes</td>
</tr>
<tr>
<td>Examiner Turnover</td>
<td>~33% per year</td>
<td>5% per year</td>
</tr>
<tr>
<td>Bifurcation of Search &amp; Examination</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Loser Pays</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

“And the wisdom to know the difference…”

This presentation considers US and EP outcomes at aggregate and “matched pair” levels

- “Exact match” matched pair approach for prosecution outcomes (Graham & Harhoff, 2006). Filing date / priority date matches.
- Data sources: Innography, Lex Machina, PATSTAT, Google Patents, WIPO/Schmcoch, NSF, PTO/EPO
The quantity and quality of patents in force is the result of three sets of decisions:

- Patent Application
- Patent Examination
- Patent Renewal

Result: Patents in Force
Each is influenced by doctrinal, institutional, economic, and market factors.

Patent Application $\times$ Patent Examination $\times$ Patent Renewal $\rightarrow$ Patents in Force
Comparing the US and EP at each of these stages...
At each stage, the US tilts towards more quantity – ex: 2002

US PATENTS (FILED 2002)

- 273K US applications
- x 74% grant rate
- x 37% projected* Y20 renewal rate

75K US patents in force in Y20

EPO PATENTS (FILED 2002)

- 120K EPO applications
- x 50% grant rate
- x 12% projected* Y20 renewal rate

6.9K EPO patents in force in Y20


- 2.3 x applications
- x 1.5 x grant rate
- x 3x renewal rate

10x more US patents in force than EPO

Sources: PATSTAT 2015 (application and grant numbers), Trilateral Statistics 2002 Report (projected renewal rates).
The disparities are greatest in tech, and growing

Sources: PATSTAT 2015 (application and grant numbers), Trilateral Statistics 2002 Report (projected renewal rates).*“Electrical Engineering” patents as defined by WIPO/Schmoch
What explains the differences in applications?


2.3 x applications
x
1.5 x grant rate
x
3x renewal rate

10x more US patents in force than EPO
The EPO did not experience the same surge in tech patenting that the US did.

Source: PATSTAT 2015, Sector data based on WIPO in accordance with Schmoeh (2008)
What has driven the surge in US tech patents?
Defensive/FTO driven patenting is likely one factor

Source: NSF, USPTO via PATSTAT 2015, Lybbert and Zolas 2013
Other factors that contribute to the differences

- Relative value of US v. EU patents
- Scope of patentability
- Size, importance of US v. EU markets
- Loser pays in EU, overall enforcement climate
What explains the differences in grants?


2.3 x applications
\times
1.5 x grant rate
\times
3x renewal rate

\downarrow

10x more US patents in force than EPO
Across categories US patents are more likely to be issued than EPO patents, on the same applications.

Comparative Patent Grant Rates
(September 2002 ~7K Matched Patent Applications)*

<table>
<thead>
<tr>
<th>Category</th>
<th>EPO</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical engineering</td>
<td>66%</td>
<td>82%</td>
</tr>
<tr>
<td>Instruments</td>
<td>53%</td>
<td>75%</td>
</tr>
<tr>
<td>Electrical engineering</td>
<td>43%</td>
<td>76%</td>
</tr>
<tr>
<td>Chemistry</td>
<td>52%</td>
<td>68%</td>
</tr>
</tbody>
</table>

EPO’s lower grant rate is due to higher applicant withdrawal rates (not refusals)


- 81% Withdrawn
- 13% Refused
- 6% Pending

The majority of nongranted apps in the EPO are withdrawn, not refused
Less than half of IPRed US patents* that were filed for in Europe have actually been granted in Europe… with many of the remainder withdrawn…

*IPRed patents that have been the subject of a final decision as of June 2015. Source: Lex Machina, Innography
The ‘137 DataTreasury patent was the subject of 7 EP Applications, none of which matured into a patent.

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EPO examiners are more likely to cite non-patent literature (NPL)


<table>
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<tr>
<th>Field</th>
<th>US Examiner-cited NPL</th>
<th>EPO Examiner-cited NPL</th>
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<tbody>
<tr>
<td>Chemistry</td>
<td>27%</td>
<td>59%</td>
</tr>
<tr>
<td>Electrical engineering</td>
<td>13%</td>
<td>50%</td>
</tr>
<tr>
<td>Mechanical engineering</td>
<td>6%</td>
<td>29%</td>
</tr>
<tr>
<td>Instruments</td>
<td>11%</td>
<td>34%</td>
</tr>
<tr>
<td>Other fields</td>
<td>6%</td>
<td>20%</td>
</tr>
<tr>
<td>Average All</td>
<td>14%</td>
<td>44%</td>
</tr>
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</table>

Source: EP Register 2015, USPTO PAIR 2015, Google Patents (Front Page information)
Sources of Data

(12) United States Patent
Guevremont et al.

(54) TANDEM FAIMS/ION-TRAPPING APPARATUS AND METHOD

(75) Inventors: Roger Guevremont, Gloucester (CA); Randy Purves, Gloucester (CA); David Barnett, Orleans (CA)

(10) Patent No.: US 6,703,609 B2
(45) Date of Patent: Mar. 9, 2004

(56) References Cited

U.S. PATENT DOCUMENTS

OTHER PUBLICATIONS

* cited by examiner

Google Patents, 2015 Edition:

NON-PATENT CITATIONS

Reference
1 * See references of WO01695472A2

* Cited by examiner
Why does EP have high satisfaction even with relatively lower grant rate?
EPO’s lower grant rate is due to higher applicant withdrawal rates (not refusals)


- 81% Withdrawn
- 13% Refused
- 6% Pending

The majority of nongranted apps in the EPO are withdrawn, not refused.
What makes EPO applicants withdraw?

“In the EPO, patents are granted in 49% of total filings, with 22% of applications abandoned after the search report and 29% abandoned after examination.”

- EPO President Battistelli at the 30th Annual US Bar- EPO Liaison Council Meeting, 10/30/2014
EPO conducts a single search, invests in quality upfront. PTO is more tolerant, allows refilings.

While time for searching prior art varies, EP prior art searching take ~8-12 avg., vs. ~2 hours on average at the PTO (van Pottelsberghe de la Potterie (2011), EPO)
Jefferson was “quite favorable to the granting of patents, and granted them with great consideration, the other duties of members of this Board, in view of their high offices, made it impossible for them to devote much time to this work. As a result the law was changed in 1793 to make the granting of patents a clerical function.” – PJ Frederico, 1952
What explains the difference in renewal rates?

EPO vs. USPTO Patent Maintenance

Percentage of Patents Maintained

Years After Filing Date

Source: IP5 2013 Report
US Patents may be more valuable – they are also cheaper and easier to renew

Stepping back...
Should we worry about quality for every patent? When is the right time?

Sorting between patents that matter and patents that don’t

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Who should decide?

Sorting between patents that are likely to be enforced and those that aren’t

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<th>Patentees?</th>
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<td>Post Grant Procedures</td>
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My proposal to enhance quality: reward patentees for designating patents as defensive only or available for FRAND-licensing

Sorting between patents that are likely to be enforced and those that aren’t

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<td>Defensive only/FRAND-friendly patent option</td>
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Facilitating “Defensive Only” / “FRAND” friendly patent options

- Patentee can elect at any time to make patent “defensive” or available on FRAND and in return, get a 50% discount on fees
- Once a patent becomes defensive, must remain defensive
- Demand expressed in the marketplace through proliferation of defensive pledges: OIN, DPL, LOT, Tesla, many others
- Companies that go defensive will reduce their own costs and costs of entry/patenting for startups
- Akin to DE/UK License of Right

Sources:
Chien, Exclusionary and Diffusionary Levers in Patent Law, 2015
Thank you

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