Tech Commercialisation – Laying the Foundation
By Kho Su Yian & Loh Mee Lan
Agenda

1. Why Research?
2. Business Databases
3. Patent Databases
4. Q&A / Feedback
Why Research?
Why Research Industries?

• Understanding – Get the macro view of an industry, the overall trends and major events that shape it.

• Viability – Is it realistic to enter a particular market? What are the possible risks and rewards for particular industries (and in particular countries)?

• Context – What are the benchmarks for performance, revenue and other factors for an industry? (E.g. mobile phone market value is $950m, but home insecticides only $20m). Who are the major companies holding the most market share?
Data: Macro to Micro

**Country**
- **Statistics**: Demographics, GDP, Wages etc...
- **Analyses**: Economic, Social, Political, Legal etc...

**Industry**
- **Statistics**: Industry size, Brand & Market Shares etc...
- **Analyses**: Trends, Highlights, SWOT etc...

**Company**
- **Statistics**: Financial data, Company size etc...
- **Analyses**: SWOT, News, 3rd Party reports etc...
## What is SWOT?

<table>
<thead>
<tr>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Internal</strong></td>
<td><strong>External</strong></td>
</tr>
<tr>
<td><strong>Strengths</strong></td>
<td><strong>Weaknesses</strong></td>
</tr>
<tr>
<td><strong>Opportunities</strong></td>
<td><strong>Threats</strong></td>
</tr>
</tbody>
</table>
The “sweet spot” of innovation is where your solution is at the convergence of Feasibility, Viability and Desirability.

Source: https://www.ideou.com/pages/design-thinking
# Database Matrix

<table>
<thead>
<tr>
<th>Databases</th>
<th>Desirability</th>
<th>Feasibility</th>
<th>Viability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Social</td>
<td>Political</td>
<td>Technology</td>
</tr>
<tr>
<td>ABI/Inform</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>BMI Research</td>
<td>No</td>
<td>Limited</td>
<td>Limited</td>
</tr>
<tr>
<td>Business Source Premier</td>
<td>Yes</td>
<td>Limited</td>
<td>Limited</td>
</tr>
<tr>
<td>Factiva</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Frost &amp; Sullivan</td>
<td>No</td>
<td>No</td>
<td>Limited</td>
</tr>
<tr>
<td>Gartner</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Passport</td>
<td>Yes</td>
<td>Limited</td>
<td>No</td>
</tr>
<tr>
<td>Patsnap</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Quick Question

• Are you familiar with:

  • FindMore @NUSL
  • Find It! @ NUS Libraries in **Databases**
  • Find It ! @ NUS Libraries in **Google Scholar**
  • Proxy Bookmarklet
  • Boolean Logic (And, Or, Not)
Resources
• **BMI Research** - Provides daily views, reports and strategic content, data and forecasts on various industries. Also includes a small collection of in-house statistical data (BMI Databases).

• **Frost & Sullivan** - Has market research on various technical and technology industries. Also provides market drivers and restraints, as well as possible market opportunities.

• **Passport** - Provides statistics, analysis, reports, surveys and breaking news on consumer product industries, some services, F&B packaging and ingredients. Also contains data and analysis on consumer lifestyles, population trends, and socioeconomic analysis for several countries.
Company Databases

• **Business Source Premier** - Contains company profiles and SWOT analyses of major companies. USA-centric, so coverage outside of USA is not comprehensive.

• **ABI/Inform** – Snapshots of various companies, SWOT analyses and some risk analyses. Global coverage is better than BSP, but still not comprehensive.

• **Factiva** – Company Snapshots and reports, listing of peer companies, breaking news of current events.
Company Data: Patents

- Find out which companies are involved in similar research by looking at patent assignees.
- Searching for patents is also essential to research, as you do not wish to unknowingly infringe on an active patent.
Business Database List

• A lot to take in?
  Don’t panic, you can read about the databases at your leisure with this handout:
  bit.ly/bdb201903

• More information on relevant library resources can also be found here:
  http://libguides.nus.edu.sg
Free (or Almost Free) Resources

• Blogs and free reports from major market research companies, e.g.
  • Economist Intelligence Unit (EIU)
  • Euromonitor
  • Forrester
  • Gartner
  • McKinsey
  • Mintel

• Government websites can offer free statistics and analyses e.g.
  • Enterprise Singapore
  • Export.gov (USA website but with international data)
  • National Library Board E-Resources
    (some databases have to be accessed from a designated terminal in Lee Kong Chian Reference Library)
Demo
• Go to www.lib.nus.edu.sg to access the Library Portal
Tech Commercialization
Patents Searching

Loh Mee Lan (Senior Librarian, NUS Libraries)
18 Mar 2019
Learning Outcomes

- Patent Searching
  - Introduction to IP & patents
- How to read a patent document
- How to conduct patent searches in Lens.Org
- Introduction to patent analysis
  - Patsnap Insights
  - Patsnap Landscape Maps
Introduction to Intellectual Property (IP) & Patents

Loh Mee Lan
Introduction to IP & Patents

What are the types of IP found in such products?

- **Trademarks** – apple logo, “Iphone”
- **Registered designs** – aesthetic appearance (shape of the phone)
- **Layout design of ICs**
- **Copyright** (embedded operating system and other software)
- **Patents** – Functional features and is one of several forms of intellectual property (IP)

For more information, go to [Patent Libguide](#) (FAQs and Articles section).
How to Read a Patent Document

Loh Mee Lan
HOW to Read a Patent Document

View this patent (US9315403) in Google Patent

References Cited
Find related patents, what improvements have been made

Classification Numbers
“Patent classification is a system of sorting inventions and their documents into technical fields covering all areas of technology.”


See also Patsnap Libguide on how to search patent classification (http://www.lib.nus.edu.sg/ilp/pat/gui/Patsnap_Classification_Search.pdf)
Claims
- Defines the legal boundaries of protection
- Often provides a clear description of the invention, process, etc.
- Usually starts with phrases like “I claim”, “We claim”, “What is claimed is”, “The invention claimed is”

- Independent Claims
“Generally an independent claim is one that does not refer to any other claim. Some independent claims may refer to other claims....”

- Dependent Claims
“A dependent claim can depend upon one or more independent claims or one or more dependent claims....”

Source: “Independent And Dependent Claims”
Suggestions on how to read a patent effectively:

- **Front page**
  - Title, patent type, publication/grant dates
  - Abstracts

- **Specifications**
  - Background of the invention
  - Summary of the invention

- **Claims**
Patent Searching

Loh Mee Lan
# Patent Searching – Introduction

## 5W1H – Searching Patents

<table>
<thead>
<tr>
<th>Why?</th>
<th>Hold exclusive right to use the invention for a period of time *</th>
</tr>
</thead>
<tbody>
<tr>
<td>When?</td>
<td>Every step of the innovation journey *</td>
</tr>
<tr>
<td>Where?</td>
<td>Databases &amp; Internet Sources (free and NUS Libraries subscribed) – refer Patent Libguide</td>
</tr>
<tr>
<td>What?</td>
<td>What are you looking for? Purpose of Your Search?</td>
</tr>
<tr>
<td>How?</td>
<td>How to Read a Patent Document How to Search Patents</td>
</tr>
</tbody>
</table>

* Source: [https://www.ipos.gov.sg/understanding-innovation-ip/patent](https://www.ipos.gov.sg/understanding-innovation-ip/patent)

Books, Journal Articles, Conference Papers, etc.
- Findmore@NUSL
- Lens.Org
Resources
- Engineering
- Medical
- Science

Non Patent Literature

Types / Sources of Information to Check

Patents
- Patent Searches
- Patent Analysis on Technology, Company, etc.

Business
- Country
- Industry
- Company
- Consumer

Current Affairs

Statistics

Information on:
- Singapore Stats
- Other Stats

Newspapers, Websites, industry reports, etc.
Approaches to Searching

Scoping Searches e.g. keywords search
- Start broadly.... using Synonyms, Truncations, wildcards variations,
- Refine with additional keywords, classification numbers, etc.

Pearl Growing Searches e.g. start from a single document
- Start with a known patent document
- Find other patents with patents using relevant classification numbers, citations analysis, references (including non patent literature), etc.

Classification Search
## Quick Comparison of 3 Patent Databases

<table>
<thead>
<tr>
<th></th>
<th>Patsnap</th>
<th>The Lens</th>
<th>Google Patents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coverage (information from their websites)</td>
<td>Over 130 million patent publications + DocDB (covers nearly 100 jurisdictions)</td>
<td>Over 111 million documents Bibliographic DocDB (covers nearly 100 jurisdictions) Full Text and Images US, EP, WIPO PCT, Australia</td>
<td>Over 120 million patent publications from 100+ patent offices</td>
</tr>
<tr>
<td>Semantic Search or similar functions</td>
<td>Yes (by publication number or text with at least 2000 characters). Retrieved up to 1000 relevant documents. Document level - “More Like This” Function</td>
<td>No</td>
<td>No separate search option Document level – have “Find Prior Art” or “Similar” Functions</td>
</tr>
<tr>
<td>Scholarly Works (found in patents document) / Non Patent Literature (NPL)</td>
<td>Literature search as separate option at main page Listed but not hyperlinked in patent documents (citations)</td>
<td>Start search either by patents or scholarly works. Scholarly data from PubMed, CrossRef, Microsoft Academic Scholarly works that found in Lens.org are hyperlinked.</td>
<td>Can includes NPL from Google Scholar at searching screen Listed but not hyperlinked in patent documents (citations)</td>
</tr>
<tr>
<td>Landscape Maps</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Patent Analysis</td>
<td>Yes  Patsnap - Overview : 7 options e.g. Application Trends, Top Assignee(s) with further subtopics  Patsnap Insights – Company and Technology Dashboards, each with breakdown by subtopics</td>
<td>Yes  Display “Graphical Analysis”: up to 11 options e.g. Top 10 inventors</td>
<td>Yes  Display 3 options: (assignee, inventors, CPCs) e.g. top assignees</td>
</tr>
</tbody>
</table>

- “The Lens serves global patent and scholarly knowledge as a public resource to make science- and technology-enabled problem solving more effective, efficient and inclusive”
- Free patent database
- Includes over 111 million documents (bibliographic / full text)
- Full text documents from US Patents, European Patents, WIPO Applications, Australian Patents, etc.) and non patent literature (over 195 million scholarly records from PubMed, CrossRef, Microsoft Academic Scholarly)
https://www.lens.org/

- Strengths: Able to find number of cites from patents to scholarly works and vice versa
- **Lens Video Tutorials** (Help Support)
- Optional: Sign up for a free **Lens.org account** (e.g. save records, set alerts)
How to Search Lens.Org – Document Search

- Search A Patent Document (US9505172)
  - Search Inventor(s)
  - Identify and search suitable classification codes
  - Find Citations (Scholarly Works, Cited By or Cites)
### Patent Searching – Lens.Org

<table>
<thead>
<tr>
<th>Operators</th>
<th>Explanation</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>AND</td>
<td>2 keywords must be found in document</td>
<td>apple AND orange</td>
</tr>
<tr>
<td>OR</td>
<td>Either keywords found in document</td>
<td>apple OR orange</td>
</tr>
<tr>
<td>NOT</td>
<td>1st keyword must be found but exclude 2nd keyword</td>
<td>apple NOT orange</td>
</tr>
<tr>
<td>&quot; &quot;</td>
<td>Keywords within quotation marks must be next to each other in the order specified</td>
<td>&quot;apple juice&quot;</td>
</tr>
<tr>
<td>( )</td>
<td>Using parentheses to define search order</td>
<td>(apple OR orange) NOT juice</td>
</tr>
<tr>
<td>*</td>
<td>Replace a string of characters at the end</td>
<td>function*</td>
</tr>
<tr>
<td>?</td>
<td>Replace a single character anywhere within the word</td>
<td>Ne?t</td>
</tr>
<tr>
<td>~</td>
<td>Proximity Search (similar to N or W or NEAR operators in other databases). Enter ~ followed by a number. In this example, it will retrieve apple pie, apple sweet potato pie, etc.</td>
<td>&quot;apple pie&quot;~2</td>
</tr>
</tbody>
</table>

**Field Search**
- Search Specific field (e.g. Title)
- Field followed by use of ":" 
- Can also use structured search form

<table>
<thead>
<tr>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>title:treatment</td>
</tr>
<tr>
<td>full_text:&quot;competitive advantage&quot;</td>
</tr>
</tbody>
</table>
All Fields:
(3D printing) OR (Additive Manufacturing) – about 6.5M records

Titles/Abstracts/Claims:
(3D printing) OR (Additive Manufacturing) – about 312K records

"3D printing" OR "Additive Manufacturing" – about 37K records

"3D printing"~2 OR "Additive Manufacturing"~2 – about 45K records
How to Search Lens.Org – Topic Search

- Topic Search
- Filter/Refine Search
- Patent Analysis
- Cited Works

Title/Abstracts/Claims Search on "3D printing" OR "Additive Manufacturing"
How to Search Lens.Org - ORCID

• Dr Ge Yu, Julia - orcid.org/0000-0002-0861-2488

For more information on Open Researcher and Contributor ID (ORCID), see ORCID Libguide
HOW to Search Patents Effectively

Beware of "naïve" keyword searches!

Patent jargon is used to broaden scope of the patent.

Sometimes the applicant simply doesn't want his application to be found.

Patent Analysis

Loh Mee Lan
- Broad overview of the technology
- Identify trends
- Who are the major companies/ institutions

Remember!!
Patent analysis forms part of the overall analysis about the market/technology

Combine with business information, current affairs, non patent literature, etc. to get a more accurate view.

- Subscribed databases
  - Patsnap
  - Inspec, etc.

- Free databases on Internet
  - Google Patents
  - The Lens
  - PATENTSCOPE, etc.
Patent Analysis – Access Patsnap

Access Patsnap via NUS Portal (http://lib.nus.edu.sg)

<table>
<thead>
<tr>
<th>Title</th>
<th>Publisher</th>
<th>Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PatSnap (Insights)</td>
<td>Others</td>
<td></td>
</tr>
<tr>
<td>PatSnap (Registration for first time users only)</td>
<td>Others</td>
<td></td>
</tr>
<tr>
<td>PatSnap (Registration guide for first time users)</td>
<td>Others</td>
<td></td>
</tr>
<tr>
<td>PatSnap (Resource Site)</td>
<td>Others</td>
<td></td>
</tr>
</tbody>
</table>
Search for a set of documents

Patent analysis using:
- Landscape maps
- Patsnap Insights
# Patent Analysis – Patsnap

## Help on Patsnap Search Operators, Syntax, etc.

<table>
<thead>
<tr>
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<tr>
<td>“ “</td>
<td>Keywords within quotation marks must be next to each other in the order specified</td>
<td>“apple juice”</td>
</tr>
<tr>
<td>( )</td>
<td>Using parentheses to define search order</td>
<td>(apple OR orange) NOT juice</td>
</tr>
<tr>
<td>*</td>
<td>Replace a string of characters</td>
<td>function*</td>
</tr>
<tr>
<td>$Wn</td>
<td>Search words within “n” words of each other, in any order</td>
<td>vitamins $W5 nutrients</td>
</tr>
<tr>
<td>$WS</td>
<td>Search words within SAME sentence</td>
<td>vitamins $WS nutrients</td>
</tr>
</tbody>
</table>

Go to Search Helper for more tips: [Search Syntax Tab](#); Use of [stemming and wildcards](#)
Patsnap Landscape Maps

Ms Loh Mee Lan
How the patents are organized:
- “patent analysis algorithms to create what is essentially a self-organising map”
- “Similar patents are positioned closer together, and different patents are spaced further apart”
- “the mountains, where patents will be clustered, represent areas of high activity and the low lying areas represent lower levels of patent activity”
- Clusters based classification codes and semantic analysis of keywords (title/abstracts)

Sources: Patsnap Help: Using The Landscape Tool & How are patents assigned to each category in Landscape
Titles/Abstracts
"3D printing" OR "Additive Manufacturing"

Additional Help (from Patsnap Website):
- Help on Landscaping

How to Access
- From Search Results Sets
- Workspace
Patent Analysis – Patsnap Landscape Maps

- See the “forests” (big picture/overview)

- Landscape maps based on the set of documents retrieved

- Is accurate as of today (legal status will change, new patents are published, etc.)

- Lastly....
  - Store your relevant patents in workspace
  - Set up alerts to keep updated......
Patsnap Insights

Loh Mee Lan
Patsnap Insights

Patsnap Insights provides business intelligence information. You can assess opportunities and threats, find valuable information, about the company or technology, etc. The data is based on information extracted from Patsnap database.

2 Types of Dashboards
- Technology
- Company

How to Access
- From Search Results Sets (Patsnap)
- Workspace (Patsnap)
- Direct from NUS Libraries Portal
Patent Analysis – Patsnap Insights

Titles/Abstracts
"3D printing" OR "Additive Manufacturing"

Patsnap Insights

Additional Help
- Quick guide on finding company information
- Quick guide on finding technology information

Patsnap Website
- Additional Help on Patsnap Insights
Additional Search Tips

Ms Loh Mee Lan
Can’t View Full Text Articles?

—Try apply Library Proxy Bookmarklet to see if NUS Libraries has the online version of the article. NUS staff/students may be able to access full text article.

We may also have the print copy of the journal in our library.
You may also be interested to view the powerpoint slides from other Researcher Unbound Workshops

- **Introduction to Intellectual Property (IP) & Patents** (13 March 2019)
  - Dr Grace Wee (ILO, NUS) shared on brief introduction to IP
  - Ms Loh Mee Lan (NUS Libraries) shared about basic searching in Patsnap
- **The Importance of Intellectual Property (IP) to Your Research** (24 October 2018)
  - Mr Daniel Poh (Partner & Patent Attorney from Marks & Clarks share about IP and its relevance to research and about the Patent System)
Additional Search Tips

Need help on searching Patsnap?

Go to Patent Libguide : Databases

Patsnap Online Help
Additional Search Tips

Refer to NUS Libraries Patent Libguide

- FAQs and articles on IP and patents
- Powerpoint presentations on other sessions conducted by NUS Libraries
- Quick Guides to Searching Patsnap and Patsnap Insights
- Access to other subscribed and free patent related databases
- Etc...

http://libguides.nus.edu.sg/patents