Patent Intelligence As An Effective Strategic Decision Support Tool For Universities

Ridhma Dhar
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WEBINAR: PATENT INTELLIGENCE AS AN EFFECTIVE STRATEGIC DECISION SUPPORT TOOL FOR UNIVERSITIES

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ROLE OF PATENTS IN ACADEMIA
Research & Innovation Eco-system

Basic Research

Applied Research

Innovation Protection & Exploitation using Patents

Wealth

Initiates research focus areas

Fills in the knowledge we don’t have

Solves a real world problem

Creates more wealth

NATIONAL GOVERNMENT INITIATIVES

RESEARCH & INNOVATION CYCLE

INDUSTRY - ACADEMIA LINKAGES

Wealth
Traditional View of Research

- **BASIC RESEARCH**
- **SCIENTIFIC APPLICATION**
- **IMPROVE SCIENCE**
- **OPEN (PEER REVIEW)**
- **PUBLISHING**

- **APPLIED RESEARCH**
- **COMMERCIAL APPLICATION**
- **IMPROVE COMMERCIAL VALUE**
- **PROTECTED**
- **PATENTING**

Changing Role

Researcher

Innovator
Changing Landscape

Boundaries between scientific & applied research are blurring

Creation & management of knowledge is changing fast

Industry-Academic collaboration is encouraged

Extraction of value from IP is gaining traction

INNOVATION DRIVERS FOR ECONOMIC GROWTH

Universities

Research Institutions
# Inventions that Changed Our World

## INVENTIONS THAT CHANGED THE WORLD

<table>
<thead>
<tr>
<th>Year</th>
<th>Invention</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1922</td>
<td>Insulin</td>
<td>University of Toronto</td>
</tr>
<tr>
<td>1938</td>
<td>Electron Microscope</td>
<td>University of Toronto, Siemens</td>
</tr>
<tr>
<td>1939</td>
<td>Penicillin</td>
<td>Oxford University</td>
</tr>
<tr>
<td>1942</td>
<td>Ultrasound</td>
<td>University of Vienna</td>
</tr>
<tr>
<td>1943</td>
<td>Pap Smear</td>
<td>Cornell University</td>
</tr>
<tr>
<td>1958</td>
<td>Pacemaker</td>
<td>University of Minnesota</td>
</tr>
<tr>
<td>1963</td>
<td>Seatbelt</td>
<td>University of Minnesota</td>
</tr>
<tr>
<td>1989</td>
<td>Cystic Fibrosis Gene</td>
<td>The Hospital for Sick Children, Toronto</td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Michigan</td>
</tr>
<tr>
<td>1996</td>
<td>Google</td>
<td>Stanford University</td>
</tr>
<tr>
<td>1996</td>
<td>HIV Anti-viral Therapies</td>
<td>Emory University</td>
</tr>
<tr>
<td>2000</td>
<td>Combination of PET/CT Scanner</td>
<td>University of Pittsburgh</td>
</tr>
</tbody>
</table>
From Lab to Market

Scientific Publication data
Scientific Papers
Conference Proceedings
Patent Data
Patents
R&D Alliances and JV and Funding Ventures
Market Data
Product Launch

Intent to Commercialize

Signal Intensity
New Product Timeline
Patents as an Important Indicator of Innovation

30% of all expenditure in R&D is wasted on redeveloping existing inventions.

80% of current technical knowledge can be found in patent documents.

70% of new (chemical) substances added to the registry from the literature come from patents.

Patents are a valuable source of information.

Source 1 & 2: Jointly published and edited by European Commission (DG Research) and the European Patent Office, 2007
University Eco-system Organization Structure

**Library**

**Vice Chancellor/President**

**Industry Engagement**

**Strategic Planning**

**DVCA**

**Business Schools**

**Faculties**

**Lecturers**

**DVCR**

**Research Office**

**TTO**

**Researchers**

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**Build Capacity**

Expertly written, classified and indexed by chemistry, engineering, life-science and electronics specialists of more than 19.5 million inventions from over 50 Patent issuing authorities in English.

**Identify Trends**

Identifying potential research collaborators or industry partners/ identify emerging areas of technology development to strategically position the faculty research into the future; map trends in technology developments, thus avoiding duplication of research effort and resources.

**Cultivate strategic collaborations**

Identify, assess and connect with best industrial partners; provide names of organisations and/or inventors for a university to speak with when travelling overseas.

**Analyse & benchmark performance**

Demonstrate university’s impact on local, regional and national economy; benchmark against peers based on number of patented inventions – not patent counts; collect patent citations for all the patented inventions quickly including their relevance.
# Looking for Answers

<table>
<thead>
<tr>
<th><strong>DVCR</strong></th>
<th><strong>VICE CHANCELLOR/PRESIDENT</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Which technologies must be patent protected?</td>
<td>Emerging Research?</td>
</tr>
<tr>
<td>Scientific Diversity?</td>
<td>How to link innovation to economic development?</td>
</tr>
<tr>
<td>Measure output in the form of Patents/Products?</td>
<td>Funding incentives? Technology Trends?</td>
</tr>
<tr>
<td>Identifying partners, licensees?</td>
<td>How to measure impact of Government funding?</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th><strong>DVCA</strong></th>
<th><strong>LIBRARY</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>How do we track new inventions?</td>
<td>Conduct comprehensive prior-art searches?</td>
</tr>
<tr>
<td>Identifying overlapping technologies?</td>
<td>How to define invention disclosures?</td>
</tr>
<tr>
<td>Map university patent volumes by categories?</td>
<td>Source of Technical Literature?</td>
</tr>
</tbody>
</table>
Effective Use of Patent Information across Departments

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>1. Identify and Monitor Potential Research Partners &amp; Collaborators</td>
<td>1. Track the flow of knowledge from universities scholarly output to the patent system</td>
</tr>
<tr>
<td>2. Map university patent volume and spin-out companies</td>
<td>2. Patent Citation Analysis for impact and quality</td>
</tr>
<tr>
<td>3. Identify industry partners, licensees, adjacent and overlapping technology</td>
<td>3. Identifying Emerging Research &amp; Technology Trends</td>
</tr>
<tr>
<td>4. Track the influence of a Researcher on Industry</td>
<td></td>
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</tbody>
</table>

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</thead>
<tbody>
<tr>
<td>1. Prepare students with the skills and knowledge to extract intelligence from intellectual property analysis when shifting to industry in the knowledge-driven economy</td>
<td>1. Identifying &amp; Inform Researchers of additional technical literature associated with an area of research</td>
</tr>
<tr>
<td>2. Alerted when collaborators or competition patents a new inventions in a specific technology area</td>
<td>2. Help define invention disclosures to the technology transfer office</td>
</tr>
</tbody>
</table>

**Patents are a source of technical & commercial insight**
Other Factors to Consider

- Due-diligence on proposals from universities and corporations
- Assessing proposed research against wider landscape (typically global in nature)

Informed Funding Decisions

- Measure the overall success of funding based on research output
- Measure impact of academic research Vs. country’s economic growth

Assessing Research Output Periodically

- Benchmark Key Performance Indicators (KPI) at country level
- Explore linkage between innovation and economic development

Updating Policy Decisions

- Finding partners
- Finding licensing opportunities
- Finding markets for your technology

Exploring Industry-Science Linkages
TECHNOLOGY TRANSFER PROCESS

EXPERTISE OF RESEARCHERS

NEEDS OF THE INDUSTRY
Valley of Death

Source: Osawa and Miyazaki (2006)
MISMATCH OF EXPECTATIONS BETWEEN ACADEMIA & INDUSTRY
Technology Development

- PROOF OF CONCEPT
- PROTOTYPE
- LONG-TERM OPPORTUNITIES

Academia

Industry

- READY-MADE TECHNOLOGY
- NEAR TERM OPPORTUNITIES
Market Readiness

- EARLY STAGE TECHNOLOGY
- INSUFFICIENT MARKET DUE TO DILIGENCE

[Academia]

[Industry]

- MARKET READY TECHNOLOGY
- CONSUMER DEMAND
Risk Management

- LIMITED WARRANTY TO LICENSEES
- LIMITED CONTROL OVER END PRODUCT

Academia

Industry

- LACK OF WARRANTY = SIGNIFICANT COST & HIGH RISK
Key Success Factors

CULTURE

RESOURCES

SUCCESS

PROCESSES
Resources

- Deshpande Centre at the MIT School of Engineering
- Technology Incubation Scheme
- Early Stage Venture Fund
- Technology Enterprise Commercialization Scheme
- Early Stage Incubators
- Patent funds
- Intellectual Discovery - S Korea
- IP Bank China
- IP Bank Taiwan
- Taiwan Medtech Fund
- IP Cube Partners - S Korea
- Y Combinator
- Golden Gate Ventures
- Proof of Concept Centers
- Public Private Sector Venture Programs

Accelerate Technologies, Tech Transfer Office of A*Star
Triple Helix Approach
Environmental and governance aspects are crucial in aligning KPIs to focus on innovation output. Incentives for researchers to focus on commercial outcomes are essential. Driven to pursue scientific publications, R&D projects are equal to marketing challenges, and autonomy is key. The combination of these elements leads to an academic entrepreneur.
**IP STRATEGY**

**WHAT?**
Critical IP’s to be developed during R&D Phase

**HOW?**
1. Internally develop
2. In-Licensed from External sources
3. Co-Developed with a Third Party

**MARKET STRATEGY**

**WHAT?**
Market needs
Identify right partners

**HOW?**
1. Market and competitive landscape
2. Primary research
3. Secondary research
Meeting Market Needs is the Key

1. IP Assessment / Protection
2. Commercial Evaluation
3. Market Engagement

Framework for Success

1. Researchers/Scientists
2. IP Licensing Professionals

Funding Budget

CULTURE
RESOURCES
PROCESSES

MARKET

1. New Products / Services
2. New Start-ups

IMPACT
Effective Technology Transfer Process

**Disclosure**
- Inventor submits disclosure to TTO
- Disclosure checked for completeness
- Specific number assigned

**Initial Evaluation**
- Ownership
- Publishing
- Initial patentability determination
- Initial glimpse at commercial landscape

**Comprehensive Evaluation**
- Market Evaluation
  - Assessment of commercial viability
  - Identification of potential targets
- IP Evaluation
  - Prior art searches
  - Filing strategy

**Patent Protection and assertion**
- Respond to Office Actions
- Research previously identified target companies
- Carrot or stick licensing
- Evidence of Use

**Commercialization**
- Contact POC’s of potential licensees
- Commence license negotiations with company(s)
- Plans for start-up company
- Receive royalties, and appropriate
- Funds received for future research

- Provisional application
- International PCT application
- PCT National Phase
- Patent Grant
PATENT INTELLIGENCE VIA A DECISION SUPPORT TOOL
What makes DWPI different?

- Enhanced titles
- Comprehensive abstracts
  - Novelty
  - Use
  - Advantage
- Error-corrected bibliographic information
- Editorially enhanced and accurate data
- Global coverage in English

Understanding a Techno-Legal Document Easily

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QUICK VIEW

**DWPI Title**

Double-frequency self-adaption concurrent processing method, involves connecting WLAN device with passage unit, obtaining first proportion coefficient and second proportion coefficient, and determining threshold value

**Original Title**

double-frequency adaptive processing method and device (Translation from Clarivate Analytics)

**DWPI Abstract**

Novelty: The method involves connecting WLAN device with a passage unit. A first service frequency band is equipped with a second service frequency band. Statistical information is transmitted according to an adjusting period unit. A frequency section is determined. A first proportion coefficient and a second proportion coefficient are obtained, where the second service frequency band is a voice service. Counting information is determined. Delay time of the first service frequency band is calculated. Threshold value is determined.

Use: Double-frequency self-adaption concurrent processing method.

Advantage: The method enables satisfying quality requirement of a service frequency band and improving service quality.

First Claim

1. A double-frequency adaptive and processing method, is applied to wireless broadband WLAN device, wherein the WLAN device comprises: transmitting the first band traffic of the first passage and the second passage for transmitting second frequency service; the method comprises the following steps: respectively obtaining the first frequency band service and service statistic information of the second frequency in the N-th adjusting period, the statistical information indicates each frequency space service performance in the adjusting period, wherein, N is a natural number, according to the statistic information and the first frequency band service and the second band needed by the service to satisfy the service quality QoS requirement, determining the first frequency band service and said second frequency band service occupied time slot in the (N + 1) th adjusting period; the second ratio coefficient, the second ratio coefficient according to the determined, for switching control of the first path and the second path in the (N + 1) th adjusting period, the first path and the second path than the slot in the (N + 1) th adjusting period is equal to the second ratio coefficient.

(Translation from Clarivate Analytics)

**DWPI Assignee / Applicant**

HUAWEI TECHNOLOGIES CO LTD, [HUA-W] [O]

**DWPI Inventor**

ZHANG YU

**Publication Number / Date**

CN104125615A / 2014-10-29

**Application Number / Date**

CN201410387977A / 2014-08-07
Smart Search

**Smart Search** significantly reduces the time taken to get to relevant results for any patent activity.

1. Take any block of text that describes what you are looking for:
   - Product Description from a website
   - Invention Disclosure
   - Claims from a Patent

2. The algorithm will use the “Smart Themes” *(converted from the text)*

3. Results are returned in relevance ranked order

*Job done in five minutes!*
Insights Dashboard

Insights Dashboard provides answers to your questions

1. Who are the major players?
2. Where is the technology being developed?
3. How is the technology trending?
4. What are my competitors working on?
5. Which are the most recent technologies?

In Just one Click
Derwent Patent Citation Index (DPCI)

DPCI is the only editorially enhanced database available focusing on patent citations – Making it easy to find closely related patents

- Shares the same editorial process as DWPI
- All citations are verified for accuracy, ensuring complete citation coverage at the invention level
- These citations cross disciplines to include all technologies and citations, including citations from examiners, inventors, oppositions, and third parties

Drive Industry-Academic Collaboration with Informed Insights
Themescape, Charting, & Visualizations

Built-in analytical tools to help you uncover not only the key information you need, but turn raw data into actionable intelligence

- Converts thousands of documents into a clear picture, helping you spot key competitors, technologies, and trends
- Allows you to view data topographically and identify common themes
- Patent and Literature comparison – comparing a patent and literature map on the same technology in order to identify new technologies and partnerships, and potential commercialization opportunities

Understand Areas of Focus on a Technology Landscape to Drive Decisions

ITB’s Merah-Putih Catalyst Tested at Pertamina’s Dumai II Oil Refinery

Institute Teknologi Bandung & PT Pertamina

Haldor Topsoe

Neste Oy

IFP

FURANIX

IFP

UOP LLC

REN FUEL

SINOPEC

FURANIX

IFP

UOP LLC

SINOPEC

Shell Oil

UOP LLC

REN FUEL

SINOPEC
Technical Maturity / Immaturity

Key Academic Tech Transfer Thought Leaders

Emerging Technologies

Fastest Growing Technology

Areas of Academic focus

Specific industrial applications

Where is your technology being used?

Where is your technology being used?
How can you quickly identify your main competitors and observe their innovation activities?

Who is most influential in each technology and are there others doing similar work as you?

Which patents are most relevant to your business? What makes them unique or novel in nature?

How to reduce the time spent building patent search queries yet still have the most relevant results sent to the top your list?

How can you quickly identify your main competitors and observe their innovation activities?

Who is most influential in each technology and are there others doing similar work as you?

**AI Enhanced Predictive Analytics**
Questions & Answers
Thank you!

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