Use of Patent Landscape Reports for Commercial Activities

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WIPO Regional Workshop on Patent Analytics, Rio de Janeiro, August 26 to 28, 2013

Classification: PUBLIC
Contents

- Syngenta

- Patent Research group and Patent Analytics agenda

- People – Process – Tools

- Example 1: Open Innovation - identification of in-licensing opportunities

- Example 2: Maximize value – 2nd uses
Helping small and large farms meet the challenges of global food security

Our ambition

is to bring greater food security in an environmentally sustainable way
to an increasing populous world
by creating a worldwide step-change
in farm productivity

8M large-scale farms >100 Ha

450M smallholder farms ~2.0 Ha
With passionate people and a strong platform

Over $1.25 billion annual R&D investment and more than 5,000 R&D staff

Over 27,000 employees in some 90 countries

$14.2bn sales in 2012
Demand for food is driven by population growth and rising calorie consumption

World population
> 80% of growth happens in emerging markets

<table>
<thead>
<tr>
<th>Year</th>
<th>Developed</th>
<th>Emerging</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>2.5 billion</td>
<td>2.5 billion</td>
</tr>
<tr>
<td>2011</td>
<td>7 billion</td>
<td>7 billion</td>
</tr>
<tr>
<td>2050</td>
<td>9 billion</td>
<td>9 billion</td>
</tr>
</tbody>
</table>

Source: FAO, Syngenta analysis

World demand for major crops*
bn tonnes

- Food
- Feed

* Includes cereals, rice, corn and soybean

+50%

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Environmental stresses are increasing

World stress map
The change in climate is already reducing water and arable land

Climate change impact
- High
- Medium
- Low

Requiring better use of existing farm land

Source: UNEP, Cline, Syngenta
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The Information Research group

- Organizationally integrated in the Intellectual Property Dept
  - located in Basel (CH); global service: ‘center of excellence’ approach

- People with strong scientific background in
  - Biochemistry
  - Biology/Biotechnology
  - Chemical Engineering
  - Organic Chemistry
  - Physical Chemistry
Aligned information research services

*VUCA = Vulnerability, Uncertainty, Complexity, Ambiguity

**Business Environment**

**Syngenta**

- Provide integrated solutions
- Create global platforms
- Leverage across org boundaries

**Information Research**

- Patent Information strategies & priorities aligned with Business
- Provide value-added information incl. Tech Mining
- Manage and maintain databases and tools
- Technology Alerting systems
Patent Analytics shapes and drives.....

Accelerates R&D
Efficient patent portfolio management

Innovation Culture

Reducing risk / exposure
External growth / leverage

FTO Expansion
IP Acquisitions

Identifying opportunities
Generating revenue

Proactive Patent Analytics

IP Exploitation
(“Intellectual Capital”)

IP Enforcement & Anti-counterfeiting
### Patent Analytics agenda

The deliverables

#### Innovation Culture
- White space analysis
  - redesign of patent portfolio by filing in identified gaps
- Open Innovation
  - external sourcing of inventions/know-how/skills
  - acceleration of R&D

#### Innovation Protection
- Patent valuation
- Patent portfolio management
  - where to create IP barriers
  - licensing-out vs. licensing-in
- Tracking fundamental inventions vis-a-vis incremental innovations
- Life-cycle management

#### Capitalize on IP Investment
- 2nd uses of technologies
  - adjacent technologies
- Identify new value capture models
- Niche market identification
- Discover new technologies and processes and their use for product development

#### FTO Expansion & IP Acquisition
- Understand potential risks and benefits of new approaches or entering new markets
- Identify acquisition targets
- Competitor patent profiling
  - understand strategies of competitors

#### IP Enforcement & Anticounterfeiting
- Infringement detection
- Understand potential risks and benefits of new approaches or entering new markets
- Identify activities of real and potential competitors
Life-cycle management and Patent Analytics

Active Ingredient / Gene + SPC for active ingredient
Mixtures / Construct
Formulation / Event
New Uses / Variety / Derived product

Product Development: 8 – 15 years
Market Exclusivity
Years

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The today’s Information Research landscape

- Market
- Development
- Invention

Number of information research projects

- Patentability
- Validity
- Patent Analytics
- Freedom to Operate

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Essential elements in the implementation of Patent Analytics
Required competencies

**Same for all Information Research work**

**General Capabilities**
- Communication and people skills
- Ability to interpret information requirements and analyze data

**Core Skills**
- Excellent scientific background (ability to fully understand the subject matter)
- Proficiency with professional information resources and retrieval technologies

**Specific for Tech Mining**

**Technical Skills**
- Good “sense” for IT
- Expert knowledge of Tech Mining tools

**Knowledge**
- Fully understands the Tech Mining process and concepts
- Ability to ‘sell’ Tech Mining work products
The process

**Search Strategy & Retrieval**
- Understand the question & translate into search strategies
- Chose appropriate data resources with analytic tools in mind
- Interactive retrieval, "Piece meal" approach

**Normalization/ Cleaning**
- Remove irrelevant documents (Garbage-in/Garbage-out)
- Application of thesauri (company and inventor)
- One document per patent family

**Visualization & Analysis**
- Man-made abstracts preferred over original abstracts
- No "one tool fits all" approach
- Collaborate and communicate
Data - Tools

Non-patent literature +10k journals

Bibliographic data

Categorization of documents into Ontology

Original or man-made abstracts; claims, description

Text mining & mapping

Bibliometrics

Graphs

90 Mio patent documents

CA

WPIX

PN list

CAABA

BIOSIS

Non-patent literature

+10k journals

Bibliometrics

Graphs

Text mining & mapping

Maps

CAABA

BIOSIS

Non-patent literature

+10k journals

Bibliometrics

Graphs

Text mining & mapping

Maps
Expectations are different

A Picture

is worth

A thousand words.

©2006 E. Aoyama

There is no value in it for me!

Business

Researcher

Tech Mining Results

Need for aligned Patent Analytics!
Customer expectations drive data and visualization analysis

Business Development
- 80:20 retrieval and quality of data sufficient
- Use of Patent Classifications and database specific codes for retrieval

Research
- Almost complete retrieval and quality of data
- Use of classifications, keywords for retrieval
- Removal of obvious irrelevant documents

Intellectual Property
- Comprehensive and high quality data set
- Retrieval includes generic query expansion
- Manual categorization of documents
Quality of data set

- Remove irrelevant documents
  - low-cost sources/flat fee tools; “enhanced” titles
- Company/organization thesaurus to account for
  - subsidiaries
  - mergers and acquisitions
  - research collaborations
  - transactions
- Inventor – patent agent - company/organization thesaurus to account for non-company/organization information in US patent applications
Tools

- Import of bibliographic data into MS Excel or other visualization tools
- “Drag and drop” creation of pivot tables and related charts

- Built-in analysis tools
- Convenient for occasional users
- Drilling down option

- Specialized on statistics; data is imported from various resources
- Provides a plethora of analysis and visualization functionalities

- Import of data and text via various filters
- Focused on text mining, black box
Summary: Patent Analytics quality

There is no "One tool fits all" approach.
The data drives the tools.
Budget

Cleaning of data
Thesauri in place
Man-made abstracts preferred over original text
Precise searches or pre-evaluation of unspecific retrieval

Question triggers document set
One document per patent family

Documents
Data quality
Technology

Build excellence in Tech Mining
# Metrics of Patent Analytics

## Driving value

### Business Impact
- Sustainable innovation protection
- Effective IP exploitation
- Open Innovation
- Efficient IP portfolio management
- FTO Expansion & IP Acquisition

### Business Partnering
(Shape & Drive)
- Patent Analytics is involved in business strategy
- Effective processes & feedback
- No. of iterations to agree
- No. of impact / total time in meeting

### Value Creation
- % Patent Analytic reports effectively used
- Value add analysis
- Value capture beyond traditional business models

### Operations & Costs
- Costs per project and overall
- No “one tool fits all”
- Time to deliver
- Balance in-house vs outsourcing
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Text mining of a patent portfolio with Themescape®
Text mining of a patent portfolio in STN AnaVist

Themescape® map of Syngenta’s Seeds & Biotech patent portfolio
Themescape® map for the identification of licensing opportunities

- Syngenta’s patent portfolio
- Citing patents of third parties
In-licensing

- Syngenta’s patent portfolio
- Citing patents universities/institutes
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Create data set for text mining on non-Agri use of fungicides

1. Compiling a comprehensive list of fungicides

2. Search fungicides compounds in database covering all technologies

3. Identify typical database and patent classifications used for fungicides in the agrochemical field

4. Exclude typical agrochemical patents via database and patent classifications

5. Text mining on the remaining document set
Themescape® map for non-Agri use of fungicides
By similar process: Themescape® map for non-Agri use of insecticides
Bringing plant potential to life
Back-up slides
High quality data sets: Keeping control in retrieval

- Low recall and high precision
- Medium recall and precision
- High recall and low precision

narrowing down
High quality data sets: Best practice general (1)

● Start with reverse searching
  - display controlled terms, patent classifications and database specific codes of relevant documents
  - search for inventors (authors) and companies active in the field

● Do not mix up narrow and broad Feature Terms/Codes in “OR” term sets

● Narrow down broad strategies to major competitors, inventors and technical field

● Piece meal approach: run many strategies
  - prepare strategies offline and paste in command input window or run in script
High quality data sets: Best practice general (2)

- For multi-featured technology start with strategies focusing on two features at a time and if necessary add additional terms/codes in a second step if answer sets are too broad

- Use “fielded” searching for broad feature terms instead of running search in default basic index only

- Search one database at a time preferred over multifile searching

- Keep the search process interactive by checking retrieved answer sets on the basis of low-cost formats and refine

- Start search in bibliographic databases and then expand to full-text databases and other sources
Generic feature expansion: an example

- Anti-Inflammatory agents
- Analgesics
- Hydroxybenzoic acids
- Salicylic acids
- Aspirin
- Acetylsalicylic acid
- CAS RN 50-78-2