Patinformatics – An Emerging Scientific Discipline*

Amit Kumar Tiwari[Δ], Mamta Kumari Raturi, Susmita Mukherjee and Prabhat Kumar Sahoo

Nectar Lifesciences Ltd., Intellectual Property Management Division, Research & Development Centre
Village: Saidpura, Tehsil: Derabassi Distt.: Mohali -140507, Punjab, India

Abstract

Patinformatics is the application of informatics methods to provide the solution to the patent information and the analysis related problems. Although this term was introduced only a few years ago, but its applications can be in a wide range of scientific and business related fields. Method and techniques of different origins have now merged into one discipline that is full of interesting and informative activities. This paper primarily focuses on presenting a general overview of patinformatics and their application in business and various scientific fields including chemicals and pharmaceuticals with special reference to India. Although all the areas of science and technology can benefit from patinformatics methods, still there are many challenging patent information and analysis related problems waiting for solutions through further development of patinformatics.

Keywords

Analysis, Blogs, Business, Clustering, Citation, Data, Database, Intelligence, Information, Informatics, Innovation, Mapping, Mining, Software, Patent, Science & Technology, Visualization

Introduction and objectives

"Today, the competition is keener; the challenge is tougher; and that is why innovation is more important than ever"[1] says Barack Obama the President of United States of America. In the era of information the role of computers and digital revolution is playing key roles in the perception and acceptance of creativity and therefore innovations.

The term "Patinformatics" appeared a few years ago and rapidly gained widespread use. Workshops and symposia are organized that are exclusively devoted to patinformatics and many job advertisements can be found in journals related to patent information. The first mention of patinformatics may be attributed to Anthony J. Trippe who coined the term in 2002. According to him, the patinformatics[2] describes "the science of analyzing patent information to discover relationships and

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Δ Corresponding main author address: # 1954, Sector 21 Panchkula – 134112, Haryana, India
Telephone No.: +91-1762-308125*, Fax No.*: *91-1762-308135*, *Mobile No.*: *+91-0-9316629623* *Email*:amit.tiwari@neclife.com

trends that would be difficult to see when working with patent documents on a one-on-one basis." The term patinformatics encompasses all forms of analyzing patent information including patent intelligence, patent mapping and patent citation analysis. As per another definition of patinformatics is concerned "it can be thought of as a macro-level science, i.e. analysis that deals with large quantities of patent information."[3]

The use of patent information and management has become a critical part in management of Research and Development (R&D), a tool for creative thinking, competitor's monitoring, technology assessment, new venture evaluation, input for licensing strategy, supporting mergers & acquisitions and human resource management.

Alternatively patinformatics may be defined as a generic term that encompasses the design, creation, organization, management, retrieval, analysis, dissemination, visualization and use of patent information. In another way, patinformatics is an information science to strengthen the efforts of every functional unit in the enterprise, from R&D and marketing to finance, human resources and mergers & acquisitions. The use of patinformatics tools are in the updation, validation of technical and scientific information and their exploitation for the betterment of innovation. Patinformatics is the judicious screening of information sources to transform vast amount of data into specific information and specific information into knowledge for the intended purpose of making better and faster decisions in various fields of science, technology and business. Patinformatics may also be defined as an application of informatics method to solve patent related problems.

A patent document contains a large number of scientific information and facts. More than 70% of the literature is available in form of this important form of industrial property. Thus, to obtain the relevant patent information on any subject matter is very essential for an information professional, a patent agent, an inventor and a corporate patent information user.[4] Patent information is the most comprehensive collection of classified technological data accumulated over a long period of time. It is the most up-to-date collection of technical and legal documents that enables to attain new information related to upcoming ideas, innovations and progress in the field of research and development. Patent information includes the patent documents that are published periodically by patent offices. The patent document contains the concerned invention, bibliographic information, the full description of how a patented invention works, the claims which determine the scope of legal protection and reference to relevant literature. In return, management benefits are given to the patentee in the form of exclusive rights for specified period of time to prevent the entry of competitors. This also makes possible for the patentee to receive royalties through license agreement. Patent information plays a vital role in development of successful innovations. It is a source of techno-legal information that can be used by researchers and inventors to find new solutions to the existing technical needs and problems. Patent information provides the most useful source of information for learning and developing creative problem solving strategies. The patent information plays a key role starting from an idea of a new innovation to the fruitful output in the form of commercialization to give economic benefits to the organization and ultimately to progress.

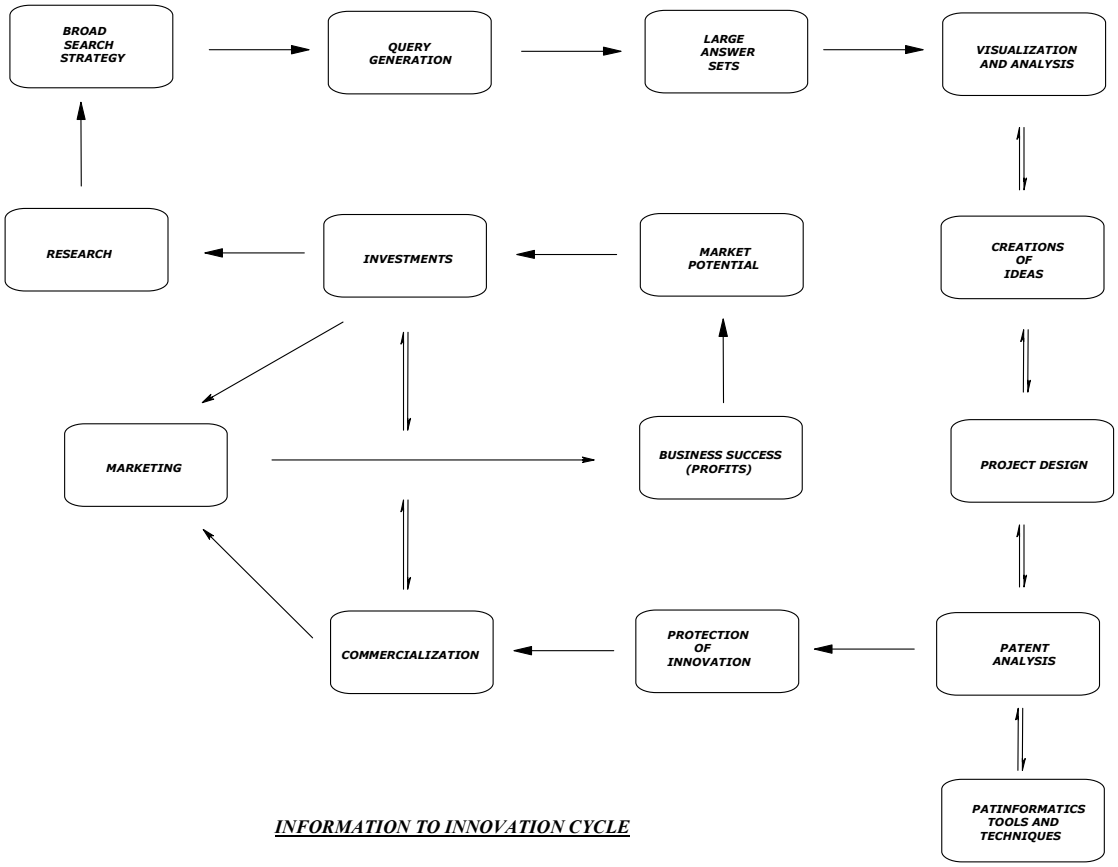
Why do we have to use at all informatics methods in the management of intellectual property (IP) especially in patents?

First of all, evolution of science & technology has produced an enormous amount of data and this data avalanche is rapidly increasing. Millions of patents/publications are known and this number is continuously increasing each year. For effective and efficient patent analysis, applications of various informatics techniques have become imperative. All the complex patent data and informations can only be managed and made accessible by storing them in databases. Software solutions can help in the management of databases, which is ultimately useful for an end user.

With the use of computational approach an end user can easily retrieve, disseminate, investigate, analyze patent information or scientific facts or basis of innovation in a very short span of time with a great precision as compared to the manual approach. Therefore, the development of informatics methods, tools and techniques for patent analysis is highly desirable. An end user can also participate in the development of innovation and creativity by utilizing the patent informations and can exploit the scientific facts by applying informatics methods. With the ever increasing volume of patents and related technical documents, the effective retrieval and analysis of patent information has become an essential skill in business. Therefore it requires novel approaches for managing large amounts of patent data, for knowledge extraction from data and for establishing complex relationships in the scientific facts. This is where patinformatics methods do come in.

Basics of patinformatics

Patent information is the information found in patent documents and the associated databases. It includes technical, legal and business-related informations. Patent information is needed for standardizing interfaces to inventions from every technical field, detailed disclosure of invention and applications in industry, analyses of activity in technological fields and it provides information on exclusive rights for determining freedom to operate. The progress and development of any organization is also dependent on the patent information. The ultimate goal of the organization is to develop intellectual assets that help it to maintain the monopoly in the market and finally growth in the form of commercialization and is directly proportional to the patinformatics. The patent information plays a key role starting from an idea of a new innovation to the fruitful output in the form of commercialization to give economic benefits to the organization and ultimately to progress. Role of information and innovation in business success is schematically represented below:-



INFORMATION TO INNOVATION CYCLE

The basis for any organization to start or to initiate a project, lies on what is in the field in terms of players as well as the relevant art. It is of immense importance to have a first hand information about the field in which one is going to venture out. To know all of this, reliable prior art search is highly essential. As soon as the market potential of

any product/process related technology in the areas of science & technology is known, it becomes an essential need in this competitive era to work fast on it and thus the knowledge of developed techniques of patinformatics stops overlapping R&D work and projects and thereby prevents unnecessary investments. For companies it is critical to detect white-spaces and patent minefields early in the R&D cycle each of which can perhaps generate or save millions of dollars at a later stage. After getting the knowledge of market potential, the literature search regarding that product/process related technology is done by primary as well as secondary sources of literature to know about the work already being done in that particular field. Approximately 80% of scientific and technical informations can be found from patent documents alone. Therefore patent informations are the basis of literature. In today's era of online database searching of patent information, it is essential to have smart strategies to avoid capture of non-relevant results on one hand and increase relevancy of result sets on the other. The various techniques of patinformatics such as integration of patent data by importing the patent data from commercial and non-commercial databases in the various formats including XML/CSV/RTF etc or exporting it in various formats, capturing claims section separately in any of the customizable format or generating family equivalents portfolio by using patinformatics tools helps in collecting the maximum patent information. The goal of searching tools and technologies is to help people succeed in complex information environments and thereby achieve business success. Patinformatics consist of software tools and services that extract more value from patent, scientific, technical and business databases. The keen study of the literature that is mainly patent information leads towards the inception of new ideas in the minds of scientists. The advanced searches like left and middle truncation, proximity, approximate searches, complex multi-criterion boolean searches, classification searches etc are done by using various techniques of patinformatics. The best searching strategy is the fundamental necessity of productive research. The literature search provides relevant and non relevant data then the sorting and screening of the non-relevant data is preferably done.

Patent analysis has become an important tool for decision making in competitive business environments. Product development, market protection, commercialization of intellectual property, and management of technology – all of these activities can benefit from publicly available patent informations and value-added informations from commercial databases. Patent analysis consists of the evaluation and understanding of the innovation and the development of various new trends of the technologies and their competitive positioning. The analysis of the patent information is the most sensitive part and therefore a large number of advanced techniques of patinformatics plays a major role in this step. The need for analysis and evaluation tools for patents has been acknowledged by many solution providers. New database providers related to patinformatics are coming up into the market continuously and provide tools for reading and evaluating the patents. The database and software providers provide the patinformatics tools for analyzing sets of patent documents by retrieving and making basic statistics for patent documents and additional tools for visualization and progressive analysis of patents. The different techniques of patinformatics useful for analyses are data cleanup and grouping of concepts, clustering of structured and unstructured data, mapping, citation analysis, data mining, visualization, list generation, co-occurency matrices & circle graphs and SAO functions etc.

List clean up[3] is required to produce statistically relevant results; and grouping allows synonymous terms to be combined together so that true value in a data set can be accurately assessed. Data clustering[5] is a technique in which, the information that is logically similar is physically stored together. In order to increase the efficiency in the database systems the numbers of disk accesses are to be minimized. In clustering the objects of similar properties are placed in one class of objects and a single access to the disk makes the entire class available. Clustering is often one of the first steps in data mining analysis. It identifies groups of related records that can be used as a starting point for exploring further relationships. This technique supports the development of population segmentation models, such as demographic-based customer segmentation. Additional analyses using standard analytical and other data mining techniques can determine the characteristics of these segments with respect to some desired outcome. Clustering of structured (Fielded) and unstructured (Text) data includes documents, which share a high percentage of codes in common, and are likely to be similar.

Mapping the patent landscape will give the end user an overview of and insight into patent clusters and other relevant patent data including relationships among the data points in the patent map. A map will also increase your potential for developing new technologies that can be patented and that will reinforce existing markets or secure new market shares. Patent statistics and patent maps are excellent tools to assess large sets of patent data. Many different types of patent maps exist for various purposes and users. Patent maps should be complemented with other data (market data). Patent analysis can be displayed by visual representation using bar graphs, polygonal line graphs, pie charts, radar charts and other charts/graphs, which are called 'Patent Maps'.

Patent mapping[6], is a technique that uses patent information to create a graphical or physical representation of the relevant art pertaining to a particular technology area, that can be used to illustrate a competitor's relative patent strength therein. Intelligence such as this may allow a corporation to plan research efforts strategically, evaluate the strength of its patent portfolio relative to its competitors, and identify potential licensing opportunities. Patent maps are very useful to innovators (R&D), Investors (Venture capitalists, promotional banks etc), Influencers (patent offices, policy makers) and management. Patent maps are designed based on basically three types: Manual maps which are generally computer generated maps; Data Mining that includes temporal analysis of the patent data and arrange the extracted data as a Co-occurancy Matrix from structured/fielded data; Text Mining that Involved Concept Mapping and Concept Clustering.

Visualization[7] is an especially effective way of representing the results of patent analysis. Visualization methods are considered to be proper for representing patent information and its analysis results. Therefore, patent visualization is a key tool for patent analysis and detection of technical opportunities. Visual analysis is a powerful method to address challenges posed by patent information overload. An increasingly used mechanism is visual analysis of patents that involves 2-dimensional spatial patent visualization and leverages the capability of the human visual system to identify patterns and anomalies. The key advantages of visual patent analysis are that you can drastically reduce the time-to-insights and explore intellectual property-congested technology spaces in a swift but efficient fashion. The ease of use and intuitive nature of visual analysis tools makes it easy for even business and R&D teams to use for their analysis needs. Visual patent analysis is used to explore the relationship between companies, inventors and their research and to explore semantic relationships between patent content. Co-occurrence links between entities are usually calculated using matrix multiplication. It allows connections to be made between two or more fields of information and provides a representation of how strong the connection is. In the case of non-binary occurrence matrices, it is necessary to use a generalized matrix multiplication method to calculate co-occurrence counts. When this is necessary, the generalized matrix multiplication to implement the overlap function for calculating co-occurrence counts.

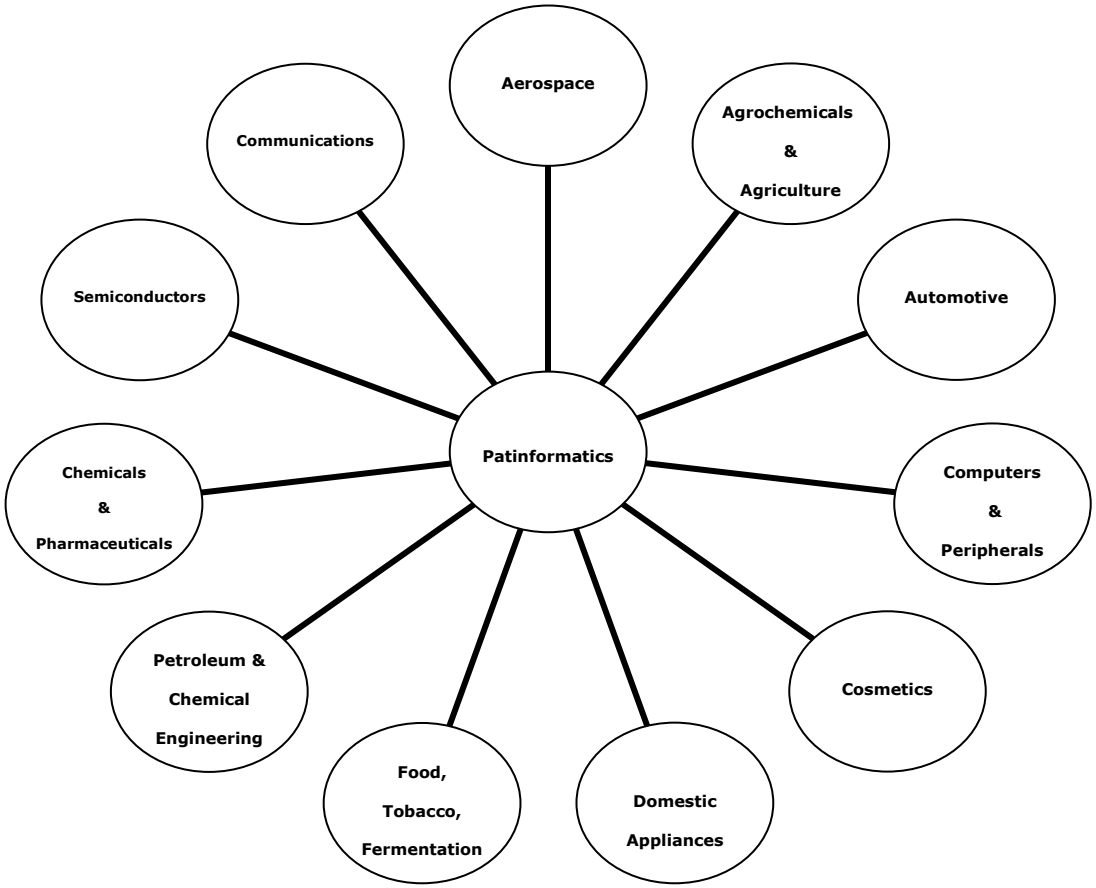
Citation analysis [9] is the important technique of patent analysis. The patent documents cited in the search report or in bibliographic page of the patent are referred as the patent citations. The relationship between the patents that cite one another are shown in the form of hyperbolic trees. This tool is very useful as far as analytics of patents are concerned, by using this inbuilt tool a user/searcher can visualize and carry out the patent mapping of backward and forward citations mentioned in the patent records. A user/searcher can map backward and forward references or both at the same time and make citation tree and generations, in which different type of analysis can be performed. Analysis may be based on time interval preferably one, five or ten years, inventors, applicants or assignee linkages, title etc. In Patent cocitation analysis, the reference patents are clustered by cocitation. This yields groups of reference patents representing co-used base technologies. The resulting groups are visualized using cross maps to show correspondence of base technologies to technology fronts.

The goal of subject, action, and object (SAO functions) [10] is to present the user a short structure which contains the technological key findings of the patent text. To do so the main elements of the phrase have to be identified. By using statistical information the elements of SAO, the phrase are determined. The main teachings of the document can be isolated and examined by identifying the SAOs. Data mining[11, 12] is the extraction of hidden predictive information from large databases and is a powerful new technology with great potential to help companies focus on most important information in their data warehouses. Data mining tools predict future trends and behaviors, allowing businesses to make proactive, knowledge-driven decisions. Data mining automates the process of finding predictive information in large databases and automates discovery of previously unknown patterns. The most commonly used techniques in data mining are artificial neural networks, decision trees, genetic alogrithms, nearest neighbour methods and rule induction. Leading experts Usama Fayyad & Evangelos Simoudis discussed how the data is converted in to knowledge. According to them data mining consists of selection of data, preprocessing of targeted data, transformation of the targeted data, exclusive data mining to get various patterns for evaluations and implementation and finally knowledge.

The use of advanced techniques for patent analysis helps in making the right decisions on right time. If during analysis some similar document is found then its legal status analysis is carried out, which helps in taking the decision for allowing the scientist to freely operate the process. If the process is novel then there are different tools and techniques to handle patent drafting, filing and prosecution thereof. There are different techniques for maintaining the patent after its granting. When the process is commercially used then it provides the monetary benefits to the organization and the profit is invested in the R & D of new product/process and the cycle goes on.

Applications of Patinformatics

The effective management of information is increasingly recognized as being of vital importance in the success of both public and private sector organizations of all sorts. This is particularly so in the case of science and technology, and where there is a need to handle not only information in traditional, textual, and numeric databases, but also databases containing information about the two-dimensional or three dimensional approaches. Recently the patent related informations have enormously increased in the field of science & technology. This has resulted in the emergence of the discipline of patinformatics, which involves the creation, retrieval, organization, dissemination and processing of patent information.. The range of applications of patinformatics is rich indeed; any field of science & technology can profit from its methods. The following pictorial representation shows applications of patinformatics in different areas of science & technology, but it has to be emphasized that this list of applications is by far not the complete one:-



Patent Databases

A database[13] is simply an organized collection of related data, typically stored on disk/server, and accessible by possibly many concurrent users. The databases are needed for collection and preservation of data, making data easy to find and search, standardizing data representation and finally organizing data into knowledge. A database is a collection of non-redundant data which can be shared by different application systems. It stresses on the importance of multiple applications and data sharing. The primary goals of databases are to minimize data redundancy and to achieve data independence. A database management system is application software that manages one or more databases. With ever increasing numbers of patents and related documents the demand for the patent database and their management is highly imperative. A number of different types of intellectual property especially patent related informations are available on variety of commercial and non-commercial sources shown in the Table 2 A and 2 B. As the innovation and creativity is fast increasing, the growth of patent databases and related informations has also become very rapid. Selected intellectual property offices and their universal resource locator (URL) are represented in the table (3). From these URL's an end user can access the various databases if they are available.

Table (2 –A) for Patent Databases- Commercial and Non commercial

S. No.	Name of database	URL of database
1	AU Published Patent Data Searching	http://apa.hpa.com.au:8080/ipapa/asearch
2	Aureka	http://aureka.micropat.com/7w/html/7w_default.asp
3	AusPat	http://pericles.ipaustralia.gov.au/ols/auspat/
4	Australia Patent Specification Server	http://pericles.ipaustralia.gov.au/aub/aub_pages_1.process_simple_search
5	Belize Intellectual Property Journal	https://www.belipo.bz/journal.php
6	Big Patents	http://india.bigpatents.org/
7	Biosafety Database	http://www.icgeb.org/~bsafesrv/databases/patents.html
8	Brazil Patent databases	https://www.belipo.bz/journal.php
9	Brazilian Patent database	http://www.inpi.gov.br/principal?navegador=Firefox&largura=1024&altura=768
10	Canadian patent database	http://www.ipfrontline.com/depts/article.asp?id=976&deptid=6
11	Canadian Patents Database	http://brevets-patents.ic.gc.ca/opic-cipo/cpd/eng/introduction.html
12	CAS Databases	http://www.cas.org/
13	China TCM Patent Database	http://218.240.13.195/tcm_patent/englishversion/help/help.html
14	Delphion	http://www.delphion.com/
15	Depatisnet	http://depatisnet.dpma.de/
16	Derwant World Patent Index	http://thomsonreuters.com/products_services/legal/legal_products/intellectual_property/DWPI
17	Dialogue	http://library.dialog.com/bluesheets/html/bls0014.html
18	DNA Data Bank of Japan (DDBJ)	http://www.ddbj.nig.ac.jp/searches-e.html
19	DNA Patent Database (USA)	http://dnapatents.georgetown.edu/
20	Doe Patents	http://www.osti.gov/doepatents/
21	Drug Patent Watch	http://drugpatentwatch.com/
22	Drugterm	http://www.drugterm.com/
23	EAPATIS	http://www.eapatis.com/ensearch/
24	Eco-Patent Database	http://www.wbcsd.org/templates/TemplateWBCSD5/layout.asp?type=p&MenuId=MTU2MQ&doOpen=1&ClickMenu=LeftMenu
25	Ekaswa A	http://www.indianpatents.org.in/db/testmaina.asp
26	Ekaswa B	http://www.indianpatents.org.in/db/testmainb.asp
27	Ekaswa C	http://www.indianpatents.org.in/db/testmainc.asp

28	Electronic Orange Book (USA)	http://www.accessdata.fda.gov/scripts/cder/ob/default.cfm
29	Entrez Nucleotide Database	http://www.ncbi.nlm.nih.gov/sites/entrez?db=nucleotide
30	EPATRAS	http://epatras.economie.fgov.be/
31	Epoline	http://www.epoline.org/portal/public
32	Espacenet	http://ep.espacenet.com/
33	FamPat	http://www.questel.com/en/prodsandservices/pluspat.htm
34	Flexnews	http://www.flex-news-food.com/pages/3/patents.html
35	Free Stem Cell Patent Database	http://www.addovere.com/2008/04/08/free-stem-cell-patent-database/
36	Freepatentsonline	http://www.freepatentsonline.com/
37	Fullerene Patent Database	http://www.godunov.com/Bucky/patents.html
38	GenericsWeb	http://www.genericsweb.com/
39	GENESEQ	http://thomsonreuters.com/products_services/science/science_products/a-z/geneseq
40	Get The Patent	http://www.getthepatent.com/
41	Google Patents	http://www.google.com/patents
42	GQ-PAT	http://wiki.genomequest.com/index.php/GQ_Pat
43	Idaho Patents Database	http://invention.psychology.msstate.edu/patents/index.html
44	IFI CLAIMS® Patent Databases	http://www.ificlaims.com/
45	Innography	http://www.innography.com/
46	Innovation Patent Database	http://www.dolcera.com/website_prod/services/patent-database
47	International Patent Documentation Centre INPADOC	http://www.epo.org/patents/patent-information/raw-data.html
48	IP Australia	http://pericles.ipaustralia.gov.au/ols/epublish/content/olsAvailablePatentPDFs.jsp
49	ip.com prior art Database	http://ip.com/
50	IPEXL Patent search	http://www.ipexl.com/
51	Japanese Industrial Property Digital Library (IPDL)	http://www.ipdl.inpit.go.jp/homepg_e.ipdl
52	Korean Intellectual Property Rights Information Service (KIPRIS)	http://eng.kipris.or.kr/eng/main/main_eng.jsp
53	LatePatents.net	http://www.latepatents.net/
54	Lexis Nexis	http://www.lexisnexis.com/patentservices/
55	Linux Foundation Patent Commons	http://www.patentcommons.org/commons/patentsearch.php
56	MARPAT	http://www.cas.org/expertise/cascontent/marpat.htm
57	Medicine Information Central Patents (UK)	http://www.ukmicentral.nhs.uk/pressupp/patents/default.asp
58	MicroPatent	http://www.micropat.com/static/index.htm
59	Minesoft Patent Tracker	http://www.minesoft.com/patenttracker/
60	Nanotechnology Patent Database	http://download.cnet.com/Nanotechnology-Patents-Database/3000-2054_4-10399861.html
61	NanoVantage Patents Database 2005	http://software.techrepublic.com.com/abstract.aspx?docid=718725
62	National Informatics Centre	http://patinfo.nic.in/
63	NordiskaPatent	http://www.nordiskapatent.se/
64	NUS MBS Database	http://kwanghui.com/patents/
65	Orange Book Companion (USA)	http://www.fdli.org/pubs/orangebook/
66	OriProbe	http://www.oriprobe.com/cp.html
67	PatBase	http://www.patbase.com/login.asp
68	Patent Alert	http://www.patentalert.com/

69	Patent Café	http://www.patentcafe.com/
70	Patent Chemistry Database	http://info.patentchemistrydatabase.com/
71	Patent Fetcher	http://www.patentfetcher.com/
72	Patent Lens	http://www.patentlens.net/daisy/patentlens/patentlens.html
73	Patent scope (WIPO)	http://www.wipo.int/pctdb/en/search-adv.jsp
74	Patents	http://www.patents.com/
75	PatentSurf.net (USA)	http://www.patentsurf.net/
76	Patome	http://www.patome.org/
77	PatOnline	http://www.patonline.tu-ilmenau.de/login2.php
78	Pharma Valet	https://www.pharmavalet.com/
79	Propis	http://www.propis.ch/
80	PSIPS (USA)	http://seqdata.uspto.gov/
81	Questel	http://www.questel.com/
82	Recueil des Brevets d'Invention (Belgium)	http://economie.fgov.be/fr/entreprises/propriete_intellectuelle/Brevets/recueil/index.jsp
83	Republic of Ireland SPC database	http://www.patentsoffice.ie/eregister/Query/SPQuery.aspx
84	Research Disclosure	http://www.researchdisclosure.com/searching-disclosures/about-the-database
85	Russian Patent Database	http://www.patentsfromru.com/russian-dbs.html
86	Simine's U.S. Aviation Patent Database	http://invention.psychology.msstate.edu/patents/index.html
87	State Intellectual Property Office (SIPO)	http://www.sipo.gov.cn/sipo_English/
88	Slovenia SPC database	http://www2.uil-sipo.si/Squ031.stm
89	SurfIP	http://www.surfip.gov.sg/
90	Swissreg	https://www.swissreg.ch/srclient/faces/jsp/start.jsp
91	Thomson Innovation	http://www.thomsoninnovation.com/
92	UK Intellectual Property Office SPC search	http://www.ipo.gov.uk/p-find-spc/p-find-spc/
94	USA Patent term extensions lists	http://www.uspto.gov/patents/resources/terms/index.jsp
95	USGENE	http://www.sequencebase.com/usgene-sequences-database
96	USPTO	http://patft.uspto.gov/
97	USPTO-Pair	http://patft.uspto.gov/
98	Wave Power Patent Database	http://www.greentechhistory.com/wave-power-patent-database/
99	WIPO Published Sequence Listings	http://www.wipo.int/pctdb/en/sequences/

Table (2 –B) for Patent Databases- Commercial and Non commercial

S. No.	Name of database	General Remarks
1	AU Published Patent Data Searching	Australian patent database
2	Aureka	Enterprise-wide IP research, analysis and management platform
3	AusPat	Newest Australian patent search and status database
4	Australia Patent Specification Server	Australian patent database and their access to A, B, or C specifications by number only
5	Belize Intellectual Property Journal	Search applications since 2003
6	Big Patents	Indian patent applications and granted patents
7	Biosafety Database	Information on agricultural biotechnology patents

8	Brazil Patent databases	To search patents expiring on a single day or within a date range.
9	Brazilian Patent database	The database is only available in Portuguese.
10	Canadian patent database	Allows users to search patents filed in Canada
11	Canadian Patents Database	Information on drug patents in Canada
12	CAS Databases	Source of chemical substance information, accessed via SCIFINDER and STN
13	China TCM Patent Database	Database of traditional Chinese medicine
14	Delphion	A robust patent research and analysis solution which gives access to the patent information via related tools
15	DEPATISnet	Online searches in patent publications from around the world, preferably the German patents/applications.
16	Derwant World Patent Index	Comprehensive and extensive database of value-added patent documents published in the world.
17	Dialogue	Database of patents, trademark and copyrights
18	DNA Data Bank of Japan (DDBJ)	Published nucleotide and/or amino acid sequences for genes, includes patent information
19	DNA Patent Database (USA)	Georgetown university database of US DNA patents.
20	Doe Patents	Database of patents held by the US Department of Energy
21	Drug Patent Watch	Comprehensive information on drug patents and their expirations.
22	Drugterm	Comprehensive coverage of all Australian patents granted extensions of term under section 70 of the Australian Patents Act
23	EAPATIS	Abstracts and bibliographic data to Eurasian patent office (EAPO) patents
24	Eco-Patent Database	Patents related to energy and climate development, the business role and ecosystems.
25	Ekaswa A	Patent applications filed in India
26	Ekaswa B	Patent application notified for opposition
27	Ekaswa C	Patent applications published in official journal of patent office from January 2005onwards
28	Electronic Orange Book (USA)	Public database of approved drugs, often including key patent numbers and their expiry dates, preferably unexpired patents.
29	Entrez Nucleotide Database	Database of nucleotide details from various sources, including patents
30	EPATRAS	Status and translations of EP patents valid in Belgium
31	Epoline	Provides the prosecution history of European Patent Applications
32	Espacenet	Basic search and retrieval functions on a range of patent and patent-related documents.
33	FamPat	Family design database
34	Flexnews	Archive of issued patent applications for the food industry.
35	Free Stem Cell Patent Database	Stem cell patent information
36	Freepatentsonline	US patents and patent applications, EP patents, PCT and Abstracts of Japan
37	Fullerene Patent Database	Internet archive of patents related to buckyballs, nanotubes, and other fullerenes
38	GenericsWeb	Site for the generic pharma industry
39	GENESEQ	Contains nucleic acid and amino acid sequences from patents since 1981
40	Get The Patent	Patents from the USPTO, EPO, WIPO (PCT), Austria, Belgium, Canada, France, Germany, Great Britain, Japan, Spain, and Switzerland, as well as US file histories.
41	Google Patents	Search of US patents
42	GQ-PAT	Contains nucleotide and protein sequences taken from patent databases from global patent offices
43	Idaho Patents Database	Idaho patent information
44	IFI CLAIMS® Patent Databases	Comprehensive database of U.S. patents
45	Innography	Correlated patent, litigation and business search and analysis.
46	Innovation Patent Database	Collection of the available patents and non patent literature in a specific area of interest
47	International Patent Documentation Centre INPADOC	Patent Family and Legal Status

48	IP Australia	Allows users to search patents in Australia
49	ip.com prior art Database	Prior art searches
50	IPEXL Patent search	Search service with a focus on Asian patent offices and multilingual support.
51	Japanese Industrial Property Digital Library (IPDL)	Includes Patent Abstracts of Japan, with searchable English-language titles
52	Korean Intellectual Property Rights Information Service (KIPRIS)	Patent information search service covering all Korean IP information
53	LatePatents.net	Listings of patents expired due to pay maintenance fees
54	Lexis Nexis	Provides solution in the legal, risk management, corporate, government, law enforcement, accounting, and academic markets.
55	Linux Foundation Patent Commons	Database of IT patents
56	MARPAT	Markush structures searchable database of generic, hypothetical substances found in the body of patents
57	Medicine Information Central Patents (UK)	UK National Health Service database on drug patents in the UK.
58	MicroPatent	Online patent and trademark information
59	Minesoft Patent Tracker	Internet-based automatic patent monitoring service,
60	Nanotechnology Patent Database	Database of nanotechnology Patent
61	NanoVantage Patents Database 2005	Provides access to patent documentation related to nanotechnology
62	National Informatics Centre	Indian patents and a source for equivalent search
63	NordiskaPatent	Database allowing searching of patents from Denmark, Norway, Sweden and Finland
64	NUS MBS Database	Designed for academic research
65	Orange Book Companion (USA)	Database on legal and regulatory information on drugs approved in the US
66	OriProbe	The database of Chinese Patents containing the full text of all Chinese patents approved after 1985
67	PatBase	Full text searchable patent database covering over 30 million patent families
68	Patent Alert	Email alerts for newly filed U.S patents, including for HIV/AIDS and other drugs
69	Patent Café	Provides international patent search facility and patent quality analysis reports
70	Patent Chemistry Database	Indexed source of experimental data in organic, inorganic and organometallic chemistry.
71	Patent Fetcher	U.S. and foreign patent publications in PDF form
72	Patent Lens	Full-text patent informatics resource.
73	PATENTSCOPE (WIPO)	Search international patent applications filed under Patent Cooperation Treaty
74	Patents	Patent search
75	PatentSurf.net (USA)	Surf US patents by discovering natural relationships
76	Patome	Database of biosequence data in patents from WO, EP, US, JP
77	PatOnline	Database with documents from DE, EP, WO, US, JP, DD, FR, RU, SU, and GB.
78	Pharma Valet	Database of approved US and Canadian drugs and their associated patent information.
79	Propis	Database from P & TS of Switzerland, offering both patents and non-patent technical and scientific literature
80	PSIPS (USA)	USPTO site to download DNA sequences too long to include in full in patent specifications.
81	Questel	Patent and trademark informations
82	Recueil des Brevets d'Invention (Belgium)	Belgian official journal (1997 - 2008)
83	Republic of Ireland SPC database	Search by number, date, product and applicant of Irish patents
84	Research Disclosure	Non-patent literature
85	Russian Patent Database	Russian patent searches
86	Simine's U.S. Aviation Patent Database	Database related to aviation
87	State Intellectual Property Office (SIPO)	Allows users to search the Chinese patent register in English

88	Slovenia SPC database	English language search form
89	SurfIP	Patents, trademarks and designs search service
90	Swissreg	Databases of all forms of IP in Switzerland
91	Thomson Innovation	Combines intellectual property, scientific literature, business data and news with analytic, collaboration and alerting tools
92	UK Intellectual Property Office SPC search	Retrieve information on UK Supplementary Protection Certificates (SPC) by patent or SPC number
94	USA Patent term extensions lists	US equivalent of SPC, official database
95	USGENE	Provides search access to all peptide and nucleotide sequences from applications and issued patents of the USPTO
96	USPTO	Main US official patent database site, with separate databases for granted patents and published applications
97	USPTO-Pair	Allows users to obtain the file wrapper (prosecution history) for more recent US patent applications
98	Wave Power Patent Database	US Database of wave power
99	WIPO Published Sequence Listings	Nucleotide and protein sequence listings in WO applications

Table (3) for selected Intellectual Property Offices of the world

S. No.	Country	URL for Patent Offices
1	Africa Regional (ARIPO)	http://www.aripo.org/
2	African Intellectual Property Organization	http://www.oapi.wipo.net/en/OAPI/index.htm
3	Albania	http://www.alpto.gov.al/kerko.asp
4	Algeria	http://www.inapi.org/accueil/
5	Andorra	http://www.ompa.ad/indexang.html
6	Antigua and Barbuda	http://www.ab.gov.ag/gov_v3/index.php
7	Argentina	http://www.inpi.gov.ar/templates/index.asp
8	Armenia	http://www.aipa.am/en/
9	Australian Patent Office	http://www.ipaustralia.gov.au/
10	Austrian Patent Office	http://patentamt.at/Home/index1.html
11	Azerbaijan	http://www.azstand.gov.az/
12	Bahamas	http://www.bahamas.gov.bs/rgd
13	Bahrain	http://www.moic.gov.bh/moic/en
14	Barbados	http://www.caipo.gov.bb/index2.htm
15	Belarus	http://www.belgospatent.org.by/
16	Belize	http://www.belipo.bz/
17	Benelux Trademark Office	http://www.boip.int/index.html
18	Benin	http://www.mic.bj/spip.php?rubrique37
19	Bhutan	http://www.ipbhutan.gov.bt/
20	Bosnia and Herzegovina	http://www.ipr.gov.ba/
21	Botswana	http://www.mti.gov.bw/index.php?option=com_content&view=article&id=91&Itemid=22
22	Brazilian Patent Office	http://www.inpi.gov.br/principal?navegador=Firefox&largura=1024&altura=768
23	Brunei Darussalam	http://www.agc.gov.bn/
24	Burundi	http://www.commerceetindustrie.gov.bi/
25	Cambodia	http://www.moc.gov.kh/

26	Canadian Intellectual Property Office	http://www.cipo.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/Home
27	Chile	http://www.inapi.cl/
28	Chinese Patent Office	http://www.cpo.cn.net/
29	Colombia	http://www.sic.gov.co/
30	Cook Islands	http://www.cook-islands.gov.ck/
31	Costa Rica	http://www.registronacional.go.cr/
32	Croatian Patent Office	http://www.wipo.int/directory/en/urls.jsp
33	Cuban Patent Office	http://www.ocpi.cu/
34	Cyprus	http://www.mcit.gov.cy/mcit/mcit.nsf/dmlregistar_en/dmlregistar_en?OpenDocument
35	Czech Patent Office	http://www.upv.cz/cs.html
36	Czechoslovakia (up to 1993)= Czeck republic	http://www.upv.cz/cs.html
37	Danish Patent Office	http://www.dkpto.dk/
38	Djibouti	http://www.mci.dj/
39	Dominican Republic	http://onapi.gob.do/
40	Ecuador	http://www.iepi.gov.ec/
41	Egypt	http://www.egypo.gov.eg/english/default.htm
42	El Salvador	http://www.cnr.gob.sv/
43	Estonia	http://www.epa.ee/
44	European Patent Office	http://www.epo.org/
45	Fiji	http://www.ag.gov.fj/
46	Finnish Patent Office	http://www.prh.fi/en.html
47	French Patent Office	http://www.inpi.fr/
48	Gabon	http://cepig.org/
49	Georgia	http://www.sakpatenti.org.ge/
50	Georgian Patent Office	http://www.sakpatenti.org.ge/
51	German Patent Office	http://www.deutsches-patentamt.de/
52	Greek Industrial Property Organisation	http://www.obi.gr/obi/
53	Guatemala	http://www.rpi.gob.gt/
54	Gulf Cooperation Council	http://www.gccpo.org/
55	Holy See	http://www.vaticanstate.va/FR/homepage.htm
56	Hong Kong Patent Office	http://www.ipd.gov.hk/
57	Hungarian Patent Office	http://www.hpo.hu/English/
58	Iceland Patent Office	http://www.els.is/
59	Indian Patent Office	http://www.patentoffice.nic.in/
60	Indonesian Patent Office	http://www.dgip.go.id/ebscript/publicportal.cgi?.ucid=2650
61	Irish Patent Office	http://www.patentsoffice.ie/
62	Israel Patent Office	http://www.justice.gov.il/MOJEng/RashamPatentim/default.htm
63	Italian Patent Office	http://www.ipi.it/en_inside.asp?id=297&id_madrP=36&id_modu=615&id_serv=5
64	Jamaica	http://www.jipo.gov.jm/
65	Japanese Patent Office	http://www.jpo.go.jp/
66	Jordan	http://www.mit.gov.jo/

67	Kazakhstan	http://www.kazpatent.kz/
68	Kenya	http://www.kipi.go.ke/
69	Korean Patent Office	http://www.kipo.go.kr/kpo/user.tdf?a=user.main.MainApp
70	Kyrgyztan	http://patent.kg/
71	Latvia	http://www.lrpv.lv/index.php?lang=EN
72	Lebanon	http://www.economy.gov.lb/MOET/English/Panel/Pages/default.aspx
73	Liechtenstein	http://www.landesbibliothek.li/
74	Lithuanian Patent Office	http://www.vpb.lt/index.php?l=EN
75	Luxembourg Patent Office	http://www.eco.public.lu/
76	Macao	http://www.economia.gov.mo/index.jsp
77	Macedonian Patent Office	http://www.ippo.gov.mk/dzzis/dzzis1.nsf
78	Madagascar	http://www.omapi.mg/
79	Malaysian Intellectual Property Division	http://www.myipo.gov.my/
80	Malta	http://www.commerce.gov.mt/
81	Mexican Patent Office	http://www.impi.gob.mx/
82	Mexico	http://www.impi.gob.mx/
83	Moldovia	http://www.agepi.md/md/noutati/
84	Monaco Patent Office	http://www.epo.org/patents/patent-information/patlib/directory/monaco.html
85	Mongolia	http://www.ipom.mn/
86	Montenegro	http://www.ziscg.me/
87	Morocco	http://www.ompic.org.ma/
88	Morocco	http://www.ompic.org.ma/
89	Mozambique	http://www.ipi.gov.mz/
90	Nepal	http://www.doind.gov.np/
91	Netherlands Patent Office	http://www.octrooicentrum.nl/
92	New Zealand Patent Office	http://www.iponz.govt.nz/cms
93	Nicaragua	http://rpi.mific.gob.ni/
94	Norway	http://www.patentstyret.no/en/english/
95	Norwegian Patent Office	http://www.patentstyret.no/no/
96	OHIM	http://oami.europa.eu/ows/rw/pages/index.en.do
97	Pakistan	http://www.ipo.gov.pk/
98	Panama	http://www.mici.gob.pa/index2.php
99	Paraguay	http://www.mic.gov.py/?option=com_content&task=view&id=2&Itemid=4
100	Patent Office of the Republic of Bulgaria	http://www.bpo.bg/
101	Peruvian Intellectual Property Office	http://www.indecopi.gob.pe/0/home.aspx?PFL=0&ARE=0
102	Philippines Patent Office	http://www.ipophil.gov.ph/
103	Polish Patent Office	http://www.uprp.pl/polski
104	Portuguese Patent Office	http://www.marcasepatentes.pt/
105	Republic of Moldova	http://www.agepi.md/md/noutati/
106	Romanian Patent Office	http://www.osim.ro/
107	Russian Patent Office	http://www1.fips.ru/wps/wcm/connect/content_ru/ru

108	Saudi Arabia	http://www.gtz.de/en/weltweit/maghreb-naher-osten/13542.htm
109	Serbia	http://www.zis.gov.rs/sr/home/
110	Singapore	http://www.ipos.gov.sg/topNav/hom/
111	Singaporean Patent Office	http://www.ipos.gov.sg/topNav/hom/
112	Slovak Republic Patent Office	http://www.indprop.gov.sk/
113	Slovakia	http://www.upv.sk/
114	Slovenia	http://www.uil-sipo.si/
115	Slovenian Patent Office	http://www.uil-sipo.si/
116	South Africa	http://www.cipro.gov.za/2/home/
117	Spanish Patent Office	http://www.oepm.es/cs
118	Sri Lanka	http://www.nipo.gov.lk/
119	State Patent Office of the Republic of Uzbekistan	http://www.patent.uz/eng/
120	State Patent Office Of Ukraine	http://www.ukrpatent.org/en/
121	Sudan	http://www.ipsudan.gov.sd/
122	Swedish Patent Office	http://www.prv.se/
123	Swiss Institute of Intellectual Property	https://www.ige.ch/
124	Syrian Arab Republic	http://www.spo.gov.sy/ ; http://www.dcipsy.com/
125	Taiwan Patent Office	http://www.tipo.gov.tw/ch/
126	Tajikistan	http://www.tjpat.org/english/
127	Thai Patent Office	http://www.ipthailand.org/ipthailand/
128	The Eurasian Patent Office	http://www.eapo.org/eng/news/index.html
129	The former Yugoslav Republic of Macedonia	http://www.ippo.gov.mk/dzzis/dzzis1.nsf
130	Trinidad and Tobago	http://www.ipo.gov.tt/home.asp
131	Tunisia	http://www.innorpi.tn/
132	Turkey	http://www.turkpatent.gov.tr/portal/default.jsp
133	United Arab Emirates	http://www.economy.ae/Arabic/Pages/default.aspx
134	United Kingdom Patent Office	http://www.ipo.gov.uk/
135	United States Patent Office	http://www.uspto.gov/
136	World Intellectual Property Organisation (WIPO)	http://www.wipo.int/portal/index.html.en
137	World Trade Organisation (WTO)	http://www.wto.org/
138	Zambia	http://www.pacro.org.zm/

Patent Softwares

A software[14] includes all the various forms and roles that digitally stored data may have and can be played in a computer (or a similar system), regardless of whether the data is used as code for a CPU, or any other interpreter. It can also represent other kinds of information. Software is a general term primarily used for digitally stored data such as computer programs and other kinds of information read and written by computers. Software is also sometimes used in a more narrow sense, meaning application software only. A number of softwares are readily available for the intellectual property management with special reference to patents and serving the various purposes. The patent related softwares consist of various techniques such as importing & integrating the patent data, viewing, searching & sorting through patent data, co-citation & self citation analysis, reporting tools, data cleanup & grouping tools, clustering of structured and unstructured data, co-occurrency matrices & circle graphs, mapping and visualization of patent information, Subject/Action/Object (SAO) functions etc and thereby analyzing the patent data. A number of different types of softwares related to

intellectual property especially related to patents are available commercially and non-commercially as shown in the Table 4 along with their applications.

Table (4) for selected patent related softwares

S. No.	Name of Software	URL of Software provider	Purpose of Software
1	Aceora Software	http://www.aceora.com/	IP Business
2	AlphaPatent Associates Ltd	http://www.alphapatent.com/ren1.htm	IP Drafting
3	Anaqua	http://www.anaqua.com/	IP Analysis and Management
4	AURIGIN	http://www.aurigin.com/	IP Analysis and Management
5	AusInvent	http://www.ausinvent.com/	IP Business
6	AZ Software	http://www.azsoft.de/	IP Analysis and Management
7	BioParadigm ACCESS	http://www.biomimeticsregistry.net/page9.html	IP Information
8	BMBConnect	http://workflow.bmb-bbm.org/	IP Filing
9	Brain league IP Services	http://www.brainleague.com/	IP Analysis
10	Brux Software Solutions Ltd.	http://www.ibrux.com/	IP Filing
11	CENTREDOC	http://www.centredoc.ch/	IP Information
12	Centredoc	http://www.centredoc.ch/en/homeE.asp	Patent Information
13	chronoBOX	http://www.chronobox.de/	IP Analysis and Management
14	ClassClarify	http://www.classclarify.com/	Patent Classification
15	Cognocys, Inc.	http://www.cognocys.com/	IP Management
16	Computer Packages Inc.	http://www.computerpackages.com/	IP Management
17	Computer Software Associates, Inc	http://www.globalip.com/	IP Cost estimator
18	CPA Software Solutions	http://www.cpasoftwaresolutions.com/	IP Management
19	CPI Patent Management System	http://www.computerpackages.com/	IP Management
20	CREAX Information Technologies	http://www.creax.com/	IP Analysis
21	D'Agostini Hypertrans	http://www.dagostini.it/home.php	Patent translation services
22	Dennemeyer & Co.	http://www.dennemeyer.com/	IP Management
23	Edital	http://www.dagostini.it/home.php	IP Information
24	Edital-Intellectual Property Network	http://www.edital.com/	IP Management
25	EIDOLOGIC	http://www.eidologic.com/	IP Management
26	EP Mark	http://www.epmark.com/	IP Management
27	EPILOG	http://www.eidologic.com/	IP Management
28	EPO Services - EPOLINE	http://www.epoline.org/	IP Filing
29	Europatent	http://www.europatentdienst.de/	IP Management
30	First to File	http://www.firsttofile.com/	IP Management
31	FlexTrac Systems, Inc.	http://www.flextrac.com/	IP Case Tracking System
32	FLOWER	http://www.cardinal-ip.com/products/flower/flower.html	IP Management
33	FoundationIP	http://www.foundationip.com/	IP Management
34	GazetteGobbler.com	http://www.gazettegobbler.com/	IP Gazettes
35	Gene-IT's GenomeQuest	http://www.gene-it.com/GenomeQuest-Patent.html	IP Analysis
36	Genese	http://www.europatentdienst.de/	IP Management

37	genese.de	http://www.genese.de/	IP Management
38	Geopat	http://www.geopat.com/	IP Quotation tool
39	Georg Pintz & Partners	http://www.hupatent.com/attorney.php	Patent downloading
40	GetIPDL	http://www.aurora.dti.ne.jp/~ujihara/GetIPDL/English/	Patent downloading
41	Global IP Estimator	http://www.globalip.com/	IP Cost estimator
42	GSI Winpat	http://www.gsi-office.de/	IP Management
43	I.P.M.S.	http://www.ipmenu.com/%5C%5Cwww.ipms.com.tr	IP Management
44	IAMS	http://www.dennemeyer.com/	IP Management
45	IMCS	http://www.imcsline.com/	IP Management
46	INCOM IPS	http://www.incom-ips.de/	Information Management
47	Industrie-Software Brügmann	http://www.patorg.de/	Patent Information system
48	info patent	http://infoapps.eu/	IP Management
49	Infoapps	http://www.patorg.de/	Patent Information system
50	InfoPat - Mexican Patents	http://www.infopat.com.mx/	IP information
51	Innovation Asset Group (IAG)	http://innovation-asset.com/	IP Management
52	InProma	http://www.maxim.com.au/Inproma_New.htm	IP Management
53	Intellectual Property Online, Ltd	http://www.ippo.com/	IP Management
54	IntelliPatent	http://www.intellipatent.eu/	Patent Information system
55	INTELLIXIR	http://www.intellixir.com/	IP Analysis
56	Inteum C/S	http://www.inteum.com/	IP Management
57	INTRACOM GmbH	http://www.patentplatz.de/patentguide/	IP Management
58	IP CostCalculator	http://www.ip-calculation.com/	IP Valuation
59	IP dashboard	http://www.cardinal-ip.com/products/ipdashboard/ipdashboard.html	IP Management
60	IP Document Assembly System	http://www.ipdas.com/	IP Filing
61	IP IntelliFile	http://www.legalstar.com/IP_IntelliFile/	IP Management
62	IP LegalDock	http://www.legalstar.com/	IP Management
63	IP-Discover	http://www.ipdiscover.com/	IP Analysis
64	Ipendo AB	http://www.ipendo.com/	IP Management
65	ipMAGNET	http://www.mayamiya.com/	Patent downloading
66	IPManuals	http://www.ipmanuals.com/	IP Practice and Legislation
67	IPPortfolio	http://www.ipportfolio.com/	IP Management
68	Ipscania.com	http://www.ipscania.com/	IP information
69	IPscore® 2.0	http://www.ipscore.com/	IP Management
70	IPSoft, Inc.	http://www.ipdox.com/	IP Management
71	IPSS	http://www.ipss.com/	IP Management
72	IPsupermarket	http://www.ipsupermarket.com/	IP Business
73	IPtoGO	http://web.ncf.ca/ex133/	Patent downloading
74	IPware Corporation	http://www.ipware-corporation.com/	IP Management
75	ipWorkflow™	http://www.aspengrove.net/products/patentTrack.html	IP Management
76	IS Information Service	http://www.is-fr.com/	IP Management
77	Jurivox	http://www.mioinc.com/	IP Management

78	KMX Patent Classifier -Treparel Information Solutions	http://www.treparel.com/	IP Analysis
79	Knowledge Sharing Systems	http://www.knowledgesharing.com/	IP Management
80	Knowligent	http://www.knowligent.com/	IP Management
81	KPN Consulting	http://www.ipdiscover.com/index.htm	Patent downloading
82	KRAMER & HOFMANN	http://www.interhost.de/	Patent information
83	Krug & Partner	http://www.krug-und-partner.de/gb/kundp/kundp.htm	IP Management
84	Lawvision Information Systems	http://www.lawvision.at/	IP Management
85	Lecorpio	http://www.lecorpio.com/	IP Management
86	Legal IT Solutions	http://www.legal-it.nl/	IP IT Solutions
87	ManIPulate Systems	http://www.manipulate.co.za/	IP Management
88	MAPIT	http://www.mnis.net/	IP Analysis
89	MapOut/MapOut Pro	http://www.mapout.se/	IP management
90	Master Data Center, Inc	http://www.masdata.com/	IP Management
91	Mateo Patent	http://www.matheo-patent.com/patent.asp	IP analysis and management
92	Matheo Analyzer and Matheo Patent	http://www.imcsline.com/international/	IP Analysis
93	Matrixware	http://ip-news.matrixware.com/	IP Information management
94	Memweave	http://www.memweave.com/	IP Analysis
95	MentoringPros	http://www.mentoringpros.com/	IP Training
96	Micropat	http://www.micropat.com/static/index.htm	IP Information management
97	MightyMacro	http://www.patentseminars.com/Softwaredescriptionsbody2.asp	IP Drafting
98	MindMatters Technologies, Inc	http://www.us-mindmatters.com/	IP Management
99	Minesoft - PatentOrder	http://www.minesoft.com/	Patent information
100	MyIP - Easy Database	http://www.easydatabase.co.uk/	IP Management
101	NetsPat	http://www.netspat.com/	IP Management
102	PatAnalystT	http://www.patanalyst.com/	IP Analysis
103	Patent Caddie	http://www.patentcaddie.com/	IP Drafting
104	Patent Insight Pro	http://www.patentinsightpro.com/	IP Analysis
105	Patent Retriever	http://www.patentretriever.com/	Patent downloading
106	Patent Value Predictor	http://www.patentvaluepredictor.com/	Patent Valuation
107	PatentEase	http://www.ipbookstore.com/patentease.asp	IP Drafting
108	PatentIn 3.1	http://www1.uspto.gov/web/offices/pac/patin/patentin31rel.htm	IP Filing
109	Patent-Management.Net	http://www.patent-management.net/	IP Management
110	Patentmaps.com	http://patentmaps.com/	IP Analysis
111	PatentPleeze	http://web.ncf.ca/ex133/	Patent information
112	PatentPRO	http://www.patentpro.us/	IP Drafting
113	PatentPro	http://www.patentpro.us/	Patent information
114	PatenTrust	http://www.patentrust.com/	IP Analysis
115	PatentSmart.com	http://www.priorsmart.com/	Patent downloading
116	PatentWizard	http://www.patentwizard.com/	IP Drafting
117	PateState	http://www.patestate.com/	IP Analysis
118	paTex	http://www.cips.fi/	IP Management

119	PATLIST	http://www.patestate.com/	IP Analysis
120	PatMate	http://www.patmate.com/	Patent downloading
121	Patoffice	http://www.patoffice.de/	IP Management
122	PatraWin	http://www.patrafee.com/	IP Management
123	Patrix	http://www.prodeltasystems.com/cgi-bin/prodelta03/index.pl	IP Management
124	Patrix AB / Patrix US	http://www.patrix.com/	IP Management
125	PatSee / INAS Patent	http://www.imageapps.co.uk/software.html	Patent downloading & analysis
126	PATTSY®	http://www.pattsy.com/	IP Management
127	PATVIN	http://www.patvin.de/	IP Management
128	PCT-EASY	http://pcteasy.wipo.int/	IP Filing
129	PLXware	http://www.pl-x.com/1.1.software.shtml	IP Management
130	poxoq for patents	http://www.poxoq.com/	Patent downloading
131	Pro Delta Systems	http://www.prodeltasystems.com/cgi-bin/prodelta03/index.pl	Patent drafting
132	Rapidpat	http://www.rapidpat.com/	IP Management
133	RED Patents Online	http://www.patentsonline.com.au/	Patent downloading
134	RevaWare, Inc.	http://www.revaware.com/	IP Management
135	RightsLine, Inc.	http://www.rightsline.com/	IP Management
136	SIP	https://www.patentfamily.de	IP Information management
137	SubmitIDS	http://www.submitids.com/	IP Filing
138	The Patent Software Company	http://www.patent-software.com/	IP Filing
139	Trakker Technologies, Inc.	http://www.patentrakker.com/	IP Analysis
140	UNYCOM	http://www.unycom.com/	IP Management
141	Uranus Software	http://www.uranus.de/	Patent information
142	US Patent Search	http://www.us-patent-search.com/	Patent downloading
143	US Patent Search	http://www.pat2pdf.org/	Patent downloading
144	UTEKip	http://www.utekip.com/	IP Management
145	VantagePoint	http://www.thevantagepoint.com/	IP Analysis
146	Vinsoft	http://www.vinsoftsolutions.com/	IP Management
147	WhiteKnight Consulting Limited	http://www.whiteknightuk.com/	Patent information
148	WINPAT	http://www.gsi-office.de/	IP Management
149	WISDOMAIN	http://www.wisdomain.com/	IP Analysis
150	WizPatent	http://www.wizpatent.com/	IP Analysis

Patent blogs

A blog[15] is a type of website, usually maintained by an individual with regular entries of commentary, descriptions of events, or other material such as graphics or video. Entries are commonly displayed in reverse-chronological order. Many blogs provide commentary or news or sharing the information on a particular subject; others function as more personal online diaries. The basis of any information sharing on the World Wide Web is related to the term “Web 2.0". The term "Web 2.0" is commonly associated with web applications that facilitate interactive information sharing, interoperability, user-centered design, and collaboration on the World Wide Web. Examples of Web 2.0 include web-based communities, hosted services, web applications, social-networking sites, video-sharing sites, wikis, blogs, mashups, and folksonomies. A Web 2.0 site allows its users to interact with other users or to change website content, in contrast to non-interactive websites where users are limited to the passive viewing of

information that is provided to them. A typical blog combines text, images, and links to other blogs, Web pages, and other media related to its topic. The ability of readers to leave comments in an interactive format is an important part of many blogs. Blogging is the latest trend on the Internet, impacts not only the mainstream media and private Internet users but also business-to the point that blogs can no longer be ignored by organizations. Therefore blogs related to intellectual property especially in the case of patents are coming up and keep on increasing. Selected web-blogs related to patents, business, strategy and intellectual property are tabulated in the table (5).

Table (5) for selected website and web-blogs related to Patents, Business, Strategy and Intellectual property

S. No.	Name of Web-blog	URL of Web-blog
1	[non]billable hour	http://thenonbillablehour.typepad.com/
2	1709 Copyright Blog	http://the1709blog.blogspot.com/
3	271 Patent Blog	http://271patent.blogspot.com/
4	Adam Smith, Esq.	http://www.bmacewen.com/blog/
5	Afro-IP	http://the1709blog.blogspot.com/
6	Against Monopoly	http://www.againstmonopoly.org/
7	American IPA	http://americanipa.wordpress.com/
8	Anticipate This!	http://anticipatethis.wordpress.com/
9	Anything Under the Sun	http://www.krajec.com/blog/
10	AwakenIP	http://www.awakenip.com/
11	Berkeley IP Blog	http://www.biplog.com/
12	BioHealth Investor	http://www.biohealthinvestor.com/
13	Biotech Brasil	http://www.biotechbrasil.bio.br/en/
14	BIPO	http://bipo.us/
15	Blawg on Indian Laws, Courts and Constitution	http://lawandotherthings.blogspot.com/
16	Blawg Review	http://blawgreview.com/
17	BlawgIT	http://blawgit.com/
18	Blog on Indian Economy	http://indianeconomy.org/
19	BP/G Radio Intellectual Property Podcast	http://bpgradio.podbean.com/
20	Branding Strategy Insider	http://www.brandingstrategyinsider.com/
21	Buchanans Blawg on IP and Tech Law	http://promotetheprogress.com/
22	California Biotech Law Blog	http://www.californiabiotechlaw.com/
23	CAS-IP blog	http://casipblog.wordpress.com/
24	Chicago IP Litigation Blog	http://www.chicagoiplitigation.com/
25	Class 46	http://www.marques.org/Class46/
26	Copyfight	http://www.corante.com/copyfight/
27	Creative Commons	http://creativecommons.org/weblog/
28	Creative Commons India	http://cc-india.org/
29	Daily Dose of IP	http://dailydoseofip.blogspot.com/

30	Delaware IP Law Blog	http://www.delawareiplaw.com/
31	DennisKennedy.com	http://www.denniskennedy.com/blog/index.html
32	Dialed In	http://dialedin.org/
33	Director's Forum: David Kappos' Public Blog	http://www.uspto.gov/blog/director/
34	Domain Name	http://domaine.blogspot.com/
35	Duncan Bucknell's site updates	http://duncanbucknell.com/ipthinktank.blog
36	e^(ip)	http://emgill.blogspot.com/
37	Eastern District of Texas Federal Court Practice	http://mcsmith.blogs.com/eastern_district_of_texas/
38	European Federation of IP	http://www.efipweb.org/
39	European Patent Caselaw	http://europeanpatentcaselaw.blogspot.com/
40	FDA Law Blog	http://www.fdalawblog.net/
41	File Wrapper	http://www.filewrapper.com/
42	Fire of Genius	http://www.thefireofgenius.com/
43	FPLC IP Resource	http://ipmall.info/
44	Generic Pharmaceuticals	http://genericpharmaceuticals.blogspot.com/
45	GNA Patent Gurukul	http://www.patentgurukul.com/#
46	GRAY on Claims	http://www.marques.org/Class46/
47	Gray on Claims	http://www.grayonclaims.com/
48	Green Patent Blog	http://greenpatentblog.com/
49	Guiding Rights	http://guidingrights.blogcollective.com/
50	Harvard Business School IdeaCast	http://blogs.harvardbusiness.org/ideacast/
51	Holman's Biotech IP Blog	http://holmansbiotechipblog.blogspot.com/
52	Honoring the Inventor	http://honoringtheinventor.blogspot.com/
53	I/P Legislation Tracker	http://www.govtrack.us
54	I/P Updates	http://ip-updates.blogspot.com/
55	IAM Blog	http://www.iam-magazine.com/blog/default.aspx
56	IAM Magazine	http://www.iam-magazine.com/
57	In the Pipeline	http://www.corante.com/pipeline/
58	India Patent	http://indiapatents.blogspot.com
59	Indian IP Institute	http://www.iipsonline.com/
60	Indian Patent Oppositions	http://indianpatentoppositions.blogspot.com
61	Indian Policy Blog	http://policywise.net/
62	Infamy or Praise	http://pipeline.corante.com/
63	Infoserve 2.0	http://infoserve.blogspot.com/
64	Innovation Alliance	http://www.innovationalliance.net/
65	INSEAD Knowledgecasts	http://www.insead.edu/podcast/

66	INTA (Intl TM Association)	http://www.inta.org/
67	Integrity IP (Patent Prosecution)	http://www.integrityip.com/Default.aspx
68	Intellectual Asset Management	http://www.iam-magazine.com/
69	Intellectual Property Expert Group (ipeg)	http://www.ipeg.eu/blog
70	Intellectual Property Intelligence Blog	http://www.ipintelligenceblog.com/
71	Intellectual Property Research	http://ipresearch.blogspot.com/
72	Intellectual Property Watch	http://www.ip-watch.org/weblog/index.php
73	inter alia	http://www.inter-alia.net/
74	Internet Cases	http://blog.internetcases.com/
75	Invent Blog	http://inventblog.com/
76	Inventive Step	http://inventivestep.net/
77	IP ADR Blog	http://www.ipadrblog.com/
78	IP Asset Maximizer Blog	http://ipassetmaximizerblog.com/
79	IP Blog	indianipinfo.blogspot.com
80	IP Counsel Blog	http://ipcounsel.blogspot.com/
81	IP Deals	http://www.innovationalliance.net/
82	IP Doctor	http://ipdoctor.wordpress.com/
83	IP Dragon	http://ipdragon.blogspot.com/
84	IP Estonia	http://ipestonia.wordpress.com/
85	IP finance	http://ipfinance.blogspot.com/
86	IP JUR	http://www.ipjur.com/blog2/
87	IP Law Daily	http://iplawadvisor.com/
88	IP Litigation Blog	http://www.iplitigationblog.com/
89	IP Mall	http://www.ipmall.info/
90	IP Menu	http://www.ipmenu.com/news.htm
91	IP News Blog	http://www.ipnewsblog.com/?q=
92	IP Newsflash	http://www.ipnewsflash.com/
93	IP Osgoode	http://www.iposgoode.ca/
94	IP Pharma Doc	http://ippharmdoc.blogspot.com/
95	IP Spotlight	http://ipspotlight.com/
96	IP tango	http://iptango.blogspot.com/
97	IP Think Tank	http://duncanbucknell.com/ipthinktank.blog
98	IP Thoughts	http://www.ipthoughts.com/
99	IP Watch	http://www.ip-watch.org/
100	IP Watchdog	http://www.ipwatchdog.com/
101	IPBiz	http://ipbiz.blogspot.com/

102	IPcentral Weblog	http://weblog.ipcentral.info/
103	ipeg	http://www.ipeg.com/blog/
104	ipFrontline	http://www.ipfrontline.com/
105	IPJUR	http://www.ipjur.com/03.php3/
106	IP Kat	http://ipkitten.blogspot.com/
107	ITC Law Blog	http://www.itcblog.com/
108	Just a Patent Examiner	http://www.livejournal.com/users/just_n_examiner/
109	Law for Nerd's at Heart	http://www.nerdlaw.org/
110	Law Pundit	http://www.lawpundit.com/blog/lawpundit.htm
111	Law under the Microscope	http://lifetech.blogs.com/bionanoblawg/
112	Legal Underground	http://www.legalunderground.com/
113	Lexis Nexis Copyright Law	http://law.lexisnexis.com/practiceareas/copyright-Law
114	Lexis Nexis Patent Law	http://law.lexisnexis.com/practiceareas/patent
115	Lexis Nexis Trademark Law	http://law.lexisnexis.com/practiceareas/Trademark-Law
116	LexisNexis Patent Law Center	http://law.lexisnexis.com/practiceareas/patent
117	Likelihood of Confusion	http://www.likelihoodofconfusion.com/
118	List of IP Blogs	http://www.estig.ipbeja.pt/~obsblogjur/dintelectualblawgs.html
119	Managing Intellectual Property	http://www.managingip.com/
120	Markenbusiness	http://www.markenbusiness.com/en/index.php
121	Maryland Intellectual Property Law Blog	http://www.marylandiplaw.com/
122	May It Please the Court	http://www.mayitpleasethecourt.com/journal.asp
123	Michael Geist's Blog	http://www.michaelgeist.ca/
124	Music Law Updates	http://www.musiclawupdates.com/index_main.htm
125	Nanomedicine & IP	http://nanomedicineandip.blogspot.com/
126	Necessity's Progeny	http://www.inventblog.com/
127	OC Patent Lawyer	http://ocpatentlawyer.com/
128	OnBioVC	http://onbiovc.com/
129	Orange Book Blog	http://www.orangebookblog.com/
130	Passion, People and Principles	http://davidmaister.com/blog
131	Patent Appeals Tracer	http://www.patracer.com/the_patent_litigation_blo/
132	Patent Arcade	http://www.patentarcade.com/
133	Patent Assassins	http://www.patentassassins.com/
134	Patent Baristas	http://www.patentbaristas.com/
135	Patent Blurb	http://www.patentblurb.com/doku.php
136	Patent Briefs - PLI	http://www.pli.edu/patentcenter/default.asp
137	Patent Buddy	http://www.patentbuddy.com/

138	Patent Circle	http://patentcircle.blogspot.com/
139	Patent Docs	http://patentdocs.typepad.com/
140	Patent Infringement Updates	http://www.infringementupdates.com/
141	Patent Librarian's Notebook	http://patentlibrarian.blogspot.com/
142	Patent Pending	http://patentpending.blogs.com/
143	Patent Prospector	http://www.patenthawk.com/blog/
144	Patent Troll Tracker	http://trolltracker.blogspot.com/
145	Patentability	http://patentability.blogspot.com/
146	Patentably Defined	http://patentablydefined.com/
147	Patently Obvious	http://patentlaw.typepad.com/
148	Patently Silly	http://www.patentlysilly.com/
149	PatentlyBIOtech	http://patentlybiotech.wordpress.com/
150	Patently-O	http://www.patentlyo.com/
151	Patentnapsis	http://www.patentnapsis.com/
152	Patents 101	http://patents101.com/
153	Patents4Life	http://www.patents4life.com/
154	PatLit	http://patlit.blogspot.com/
155	PATracer	http://www.patracer.com/the_patent_litigation_blo/
156	Peter Zura's 271 Blog	http://271patent.blogspot.com/
157	Pharma Patents	http://pharmapatents.blogspot.com/
158	Pharmaceutical Business Review	http://www.pharmaceutical-business-review.com/
159	Pharmalot	http://www.pharmalot.com/
160	Pharmalyst	http://pharmalyst.blogspot.com/
161	PharmAsia News	http://www.pharmasianews.com/
162	Philip Brooks' Patent Infringement Updates	http://www.infringementupdates.com/
163	PHOSITA	http://dunlapcodding.com/phosita/
164	Phosita: IP Blawg	http://www.okpatents.com/phosita/
165	Pittsburgh IP Law Blog	http://pittsburghiplaw.com/
166	Potent Potions (Indian Pharma Analyst)	http://www.moneycontrol.com/pharma/
167	Praveen Raj Blog	http://secularcitizen.net/
168	Prior Art	http://thepriorart.typepad.com/the_prior_art/
169	Promote the Progress	http://promotetheprogress.com/blog/
170	Promote the Progress	http://www.patentlysilly.com/
171	Rainmaker	http://www.rainmaker.co.in/
172	Realm of Quality	http://realmofquality.blogspot.com/
173	Reexamination Center	http://www.reexamcenter.com/

174	Register trademark	http://tmarque.com.au/
175	Rethink(ip)	http://www.rethinkip.com/
176	Rocket Docket IP Litigation	http://www.williamsmullen.com/rocketdocketiplit/
177	Russian Patents	http://russianpatentsblog.patentsfromru.com/
178	Securing Innovation	http://www.securinginnovation.com/
179	Securing Pharma	http://www.securingpharma.com/index.php
180	Seth Godin	http://sethgodin.typepad.com/seths_blog/
181	Spicy IP	http://spicyipindia.blogspot.com/
182	StemCellPatents.com	http://www.stemcellpatents.com/
183	Steve van Dulke's Patent	http://britishlibrary.typepad.co.uk/patentsblog/
184	Sullivan's IP Law Outline & Analysis	http://www.iplawoutline.com/statement.php
185	Tangible IP	http://www.tangible-ip.com/
186	Tech Law Advisor	http://techlawadvisor.com/
187	Techknowledgy Blog	http://techknowledgyblog.squarespace.com/
188	The Business of Patents	www.the-business-of-patents.com/patents-blog.html
189	The Business Week	http://www.businessweek.com/search/podcasting.htm
190	The Ice Loop	http://www.theiceloop.com/
191	The Indiana Law Blog	http://www.indianalawblog.com/
192	The Invent Blog	http://inventblog.com/
193	The IP Factor	http://blog.ipfactor.co.il/
194	The Patent Librarian's Notebook	http://patentlibrarian.blogspot.com/
195	The Patent Prospector	http://www.patenthawk.com/blog/
196	The Prior Art	http://thepriorart.typepad.com/the_prior_art/
197	this WEEK in LAW	http://twit.tv/twil
198	Tom Peters	http://tompeters.com/
199	Trademark Blog	http://patentlawip.blogspot.com/
200	Trust Matters	http://trustedadvisor.com/blog/
201	TTABlog	http://thettablog.blogspot.com/
202	USPTO Examiners	http://usptoexaminers.com/
203	Washington State Patent Law Blog	http://www.wapatents.com/
204	Wired GC	http://www.wiredgc.com/
205	WSJ Health Blog	http://blogs.wsj.com/health/
206	WTO and India	http://indiainthewto.wordpress.com/

Selected patent information providers

It is a well known fact that outsourcing to India is growing day by day. Although the US companies are leading the list in outsourcing their businesses to India, the UK companies are not lagging behind. According to Deloitte, a leading consulting firm, British companies will need to outsource work to India in order to receive benefits of efficient labor at a low cost. The firm has predicted a huge shake-up in the area of processing in view of the globalization. The Deloitte analysis said that an increasing number of products would become commoditized. As customers are reluctant to pay more than a minimum amount for such services, margins will become low, which will be important for companies to cut costs in specific areas. Experts believe that savings generated from offshoring work could be reinvested in developing services for high-value market segments.

Business Process Outsourcing (BPO) [16] is a form of outsourcing that involves the contracting of the operations and responsibilities of specific business functions (or processes) to a third-party service provider. India has revenues of 10.9 billion USD from offshore BPO and 30 billion USD from IT and total BPO (expected in FY 2008). India thus has some 5-6% share of the total BPO Industry.

Knowledge Process Outsourcing (KPO) [17] involves the transfer of knowledge intensive business processes that require significant domain expertise, to other geographic locations. For global corporations looking to move their higher-end research like market research and equity research, analytical based services, engineering design, IPR, legal services, remote education and publishing, India is currently the location of choice. The NASSCOM (National Association of Software and Service Companies) estimates the KPO market to grow by multiple proportions to US$ 15.5 billion by 2010.KPOs specialize in following activities:-

1. High quality research report generations.
2. Market, investment and business research analysis.
3. Consumer behavior and analyses data.
4. Patent research, analysis and prosecution support; document review, litigation and due diligence; contract drafting management and administration; legal research

Legal Process Outsourcing (LPO) [18] also known as LPO services) refers to the practice of a law firm or corporation obtaining legal support services from an outside law firm or legal support services company. When the outsourced entity is based in another country the practice is sometimes called offshoring.

Table (6) for selected patent information providers (BPO/KPO/LPO)

S.No.	Name	URL
1	24/7 Customer	http://www.247customer.com/
2	Acumen LPO	http://www.acumenlpo.com/
3	Agarwal and Co.	http://www.agarwalandco.com/
4	AIPA	http://www.aipaty.com/
6	Airware LPO	http://www.airlpo.com/
7	Allsec	http://www.allsectech.com/Allsec/
8	ALMT Legal	http://www.almtlegal.com/
10	Altacit Global	http://www.altacit.com/
11	Amarjit & Associates	http://www.amarjitassociates.com/

12	Anshuj Dhingra Law Offices	http://www.adlo.in/
13	aONErgy Ventures	http://www.aonergy.com/
14	Aswal Associates	http://www.aswalassociates.com/
15	Atlaslegal	http://www.atlaslegal.com/
16	Beacon Legal	http://www.beaconlegal.co.in/
17	Bhagnari & co.	http://www.bhagnari.co.in/
18	Bimal B Bhaskar	http://www.bimalbhaskar.com/
19	Brain League IP Services	http://www.brainleague.com/
20	Chadha & chadha	http://www.iprattorneys.com/
21	Chamber of Law	http://chambersoflaw.co.in/
22	CMS Crisis Management Solutions	http://www.crisissolindia.com/home.html
23	Copal Partners	http://www.copalpartners.com/
24	Corplo Legal Outsources	http://www.corplo.com/
25	CPA Global	http://www.cpaglobal.com/legal_process_outsourcing
26	Cvent	http://www.cvent.com/
27	D.H.Law associates	http://www.dhlawassociates.com/
28	D.P.Ahuja & Co.	http://www.dpahuja.com/welcome.asp
29	Daswani & Daswani	http://www.daswaniindia.net/
30	DePenning & DePenning	http://www.depenning.com/
31	Dhingra & Singh Legal	http://www.dslegal.com/
32	Diwan Associates	http://diwanadvocates.com/
33	Dolcera	http://www.dolcera.com/
34	Dubey & Partner Advocates	http://www.dubeypartners.com/
35	EIPR India Ltd.	http://www.antipiracy-india.com/
36	eSUPPORT KPO	http://www.esupportkpo.com/
37	Evalueserve	http://www.evalueserve.com/
38	EVLG	http://www.evlg.com/
39	EXL Service	http://www.exlservice.com/
40	Gajria & co.	http://rgajaria.com/
41	Gateway Infotech	http://www.gatewayinfotech.com/KPO/
42	Genpact	http://www.genpact.com/home.aspx
43	Global intellectuals	http://www.global-intellectuals.com/
44	Integreon	http://www.integreon.com/
45	Knowledgeworks	http://www.knowledgeworksindia.com/
46	KPMG	http://www.kpmg.com/
47	Law Wave	http://www.lawwave.com/

48	Legal Process Outsourcing Pvt. Ltd.	http://www.legalprocessoutsourcing.in/
49	Legal Support Global Group	http://www.legalsupportglobal.com/
50	Legal-Professionals-India	http://www.legalprofessionals-india.com/
51	Lexadigm	http://www.lexadigm.com/
52	Lexorbis	http://www.lexorbis.com/
53	LPO India	http://www.lpoindia.com/
54	Manthan Services	http://www.manthanservices.com/privacy.html
55	MarketRx	http://www.marketrx.com/CognizantMrxMsg.asp
56	McKinsey	http://www.mckinsey.com/
57	Netscribes	http://www.netscribes.com/
58	Overlegen	http://www.overlegengroup.com/
59	Pangea3	http://www.pangea3.com/
60	Pipal research	http://www.pipalresearch.com/
61	Pricewatercooper	http://www.pwc.com/
62	SAP Labs	http://www.sap.com/india/about/company/saplabs/index.epx
63	Scopeknowledge	http://www.scopeknowledge.com/
64	SDD Global Solutions	http://www.sddglobal.com/legal_process_outsourcing.htm
65	Seth Associates	http://www.sethassociates.com/legal_process_outsourcing.php
66	Smart cube	http://www.thesmartcube.com/
67	Smartanalyst	http://www.smartanalyst.com/
68	Solomon & Rot Intellectual Property Services	http://www.solomonandroy.com/
69	Sureprep	http://www.sureprep.com/
70	Tecnova	http://www.tecnovaglobal.com/
71	Thomson Digital	http://www.thomsondigital.com/index.html
72	Trustman & co.	http://www.delhilaw.firm.in/
73	Ugam Solutions	http://www.ugamsolutions.com/
74	WNS	http://www.wns.com/
75	Yantram BPO Services Pvt. Ltd.	http://legal-process.outsourcing-services-india.com/

Indian initiatives

Patent [19] is an exclusive right granted by the government to the applicant for his disclosed invention of industrial product/process which should be new, non-obvious, useful and patentable as per the patentability criterion laid down in the national law. A patent offers technical solutions to a technical problem. In lieu of disclosure of invention, the government provides the legal protection for a limited term for the invention. A patent enunciates a contract between an inventor/applicant and the government and gives the territorial rights in the country where it is granted. The origin of Indian Patent System[20] goes back to 1856 (Act VI). Certain exclusive privileges were granted to inventors of new manufacturers for a period of 14 years. In 1859, modification of earlier act as Act XV was passed. In 1872, the patents and designs act was passed. In 1872, the patents and designs Protection Act was passed. In 1883, the protection of Invention act was passed. In 1888, Inventions and Designs Act was passed. In 1911, the

Indian Patents and Designs Act were passed. Indian Patent Act (Act 39 of 1970) came into force on April 20, 1972. There is no global patent system existing in the world to protect the invention across the world but there are 142 countries[21] participating in the Patent Cooperation Treaty (PCT) of the World Intellectual Property Organization (WIPO) and India became the part of the said co-operation from December 7, 1998. The development of Indian patent information is based on the developments of Indian patent law, which is undergoing patent reforms to conform to the stipulation of the trade-related aspects of intellectual property rights (TRIPS) agreement. The patent law amendments took place due to various policy changes. In 1999, the Patent Amendments Act allowed the patenting of product patents in agro-chemical and pharmaceutical fields and exclusive marketing rights for these products. The second Patent Amendment Act was passed in 2002 and intended to fulfill some more conditions laid out in TRIPS agreement such as raising the term of patent protection to 20 years and compulsory licensing provisions. Further amendments to the Indian Patent Act came into being in 2005 and 2006 and introduced full product patent protection in all fields as well as pre-grant opposition in addition to the existing post-grant mechanisms. In addition to the above amendments, a number of policy statements and efforts such as the Science and Technology Policy Statement of 2001, the modernization of Indian patent offices and WIPO IP trainings led to the increase of domestic patent activities. Patenting activity plays an important role for measuring innovation, research and technological development in a country. In recent years, patenting activity in India has grown significantly as a result of the growing economic activity and reforms.

Indian Patent Office (IPO) is functioning from its four branches located at Kolkata, Chennai, Mumbai and Delhi. Kolkata Office is the Head Office. The IPO has modernized its patent offices and upgraded its infrastructure. In 2007, Indian Patent Office was recognized as the International Searching Authority (ISA) [22, 23] and International Preliminary Examining Authority (IPEA) [22, 23] by the World Intellectual Property Organization (WIPO), which means that several other international applications filed in and received by the WIPO under the Patent Cooperation Treaty can be sent to India for search and preliminary examination and the patents granted can be applicable in all the WIPO member countries.

In the website of Indian Patent Office, various sections and sub-sections are available for end-users to have a glimpse of the working in Indian Patent Office. A brief glimpse of history of Indian patent system can be viewed in one section. In another section, quality policy of patent office is available. The addresses of administrative officials of patent office can also be viewed in the website. The applicants can file their patent applications at appropriate patent offices according to territorial jurisdictions which is also available in the website. The addresses and names of contact persons of intellectual property offices can be seen. Informations regarding PCT filing, competent receiving offices and international filing fees are also available. The patent forms and corresponding fees are provided therein. The recent office circulars are also displayed in the IPO website. E-filing of patent applications are also available in the portal of IPO. Public search of 18 month patent applications [24] and granted patents [24] can also be done by both quick and advance searching options. Controller's decision for patent search [24] options also exists. Recently Indian Patent Office (IPO) application status search [24] has been enabled on their web portal. Manual of Patent Practice and Procedure is also available in this website. Patent office journals [25] during the year 2005-2010 (present) is available, informations are updated every week on Friday. Annual reports of office of CGPDTM starting from 2001-2002 can also be browsed. Other publications of patent office are also available. Memorandum of Understanding between different cooperation can also be viewed. The Indian Patents Act 1970 and their amendments are also displayed, followed by notifications. Gazettes of India are also available on the portal. List of registered patent agents, patent agent examination notice, their results, previous papers and Form-23 for (application for registration of patent agents) can also be viewed in this website http://www.patentoffice.nic.in/.

A numbers of initiatives have been taken by Government and other organizations. Patent awareness has grown up [26] in India and the number of patent applications filed with the IPO has increased manifold. Due to manifold increase in patent filings in India, Government has decided to recruit more patent examiners [27] in the Indian Patent Office. IP litigations [28] have also increased in recent years in India. There is an increase in the number of applicants approaching the courts to enforce their patents or challenging the validity of patents, or even challenging the decisions of the IPO.

In future, government should work towards further development of IP infrastructure, human resources, setting up of comprehensive training, education and research facilities, procurement of databases and digitization of all records and patent information system resources. Indian corporations need to formulate their patenting strategy carefully to stay competitive. This will require creating more innovations, protecting all innovations with the relevant form of IP, respecting others' IP and extracting value from own IP through licensing, commercialization and enforcement.

Patenting activity plays an important role for measuring innovation, research and technological development in a country. In recent years, patenting activity in India has grown significantly as a result of the growing economic activity and reforms (related to patents).Indian government has taken several initiatives in the field of patent information. Following selected organizations have been set up and are serving various purposes in the field of intellectual property right including patent information.

Andhra Pradesh Technology Development & Promotion Centre (APTDC)

It was established under the joint participation of the Government of Andhra Pradesh, Confederation of Indian Industry (CII) and Technology Information, Forecasting & Assessment Council (TIFAC). APTDC caters to the needs of various industrial sectors & entrepreneurs by providing technology search and sourcing, technology marketing & promotion, project execution assistance, technical consultancy services, technology information, patent search & intellectual property rights (IPR) services. APTDC's IPR facilitation cell is providing various IPR services towards training, information & advisory services and IP Protection facilitation. Website: http://www.aptdc.com/

Biotechnology Patent Facilitating Cell (BPFC)

Biotechnology Patent Facilitating Cell, established in 1999 under Department of Biotechnology, Ministry of Science and Technology, aims to create awareness and understanding about intellectual property rights (IPR) among scientists and researchers, by arranging workshops, seminars, conferences, etc. at all levels and for introducing patent information as a vital input in the process of formulation of R&D programmes in biotechnology and providing patenting facilities to biotechnologists in the country, for filing Indian and foreign patents on a continuous basis. Website: http://www.dbtindia.nic.in/uniquepage.asp?id_pk=56

Department of Industrial Policy and Promotion (DIPP)

The Department of Industrial Policy and Promotion under the Ministry of Commerce & Industry is responsible for intellectual property rights relating to patents, designs, trade marks and geographical indication of goods and oversees the initiative relating to their promotion and protection. The major initiatives by the department include modernization of IP infrastructure and establishment of new integrated offices in Delhi, Kolkata, Chennai and Mumbai. These initiatives along with the legislative reforms which were already in place have resulted in increase in filing of patent applications. Website: http://dipp.nic.in/

FICCI Institute of Intellectual Property Development

The FICCI Institute of Intellectual Property Development undertakes research in intellectual property rights (IPR) issues and promotes knowledge of intellectual property laws of India as well as intellectual property systems of other countries. The institute regularly collaborates with international organizations like the WIPO to facilitate discussions on topical issues. Website: www.iprindia.net

Indian Drug Manufacturers' Association (IDMA)

Indian Drug Manufacturers' Association (IDMA) was formed in 1961 to help Indian manufacturers and to protect the interest of the Indian consumer. The growth which the Indian pharmaceutical industry has achieved is mainly due to the Indian Patent Act, 1970. Right from the beginning in 1961, IDMA has been in the forefront of the patents battle in India. IDMA played a major role in patent act amendments especially in the formulation of Sections 3d and 92A. Website: http://www.idma-assn.org/

Ministry of Micro, Small and Medium Enterprises (MSME)

The micro small and medium enterprises (MSMEs) have been accepted as the engine of economic growth and for promoting equitable development through out the world.

The major advantage of the sector is its employment potential at low capital cost. The MSMEs constitute over 90% of total enterprises in most of the economies. In India too, the MSMEs play a pivotal role in the overall industrial economy of the country. Website: http://msme.gov.in/

National Informatics Centre (NIC)

National Informatics Centre (NIC) is a premier science & technology institution of the Government of India, established in 1976, for providing e-Government / e-Governance solutions adopting best practices, integrated services and global solutions in government sector. It also has a database which provides information about Indian patents and suitable for equivalent search. Website: http://home.nic.in/

National Institute of Science Communications and Information Resources (NISCAIR)

National Institute of Science Communication and Information Resources (NISCAIR) came into existence in 2002 with the merger of National Institute of Science Communication (NISCOM) and Indian National Scientific Documentation Centre (INSDOC). The main activity of NISCAIR is to collect/store, publish and disseminate science & technology information through a mix of traditional and modern means, which is beneficial for different segments of society. Website: http://www.niscair.res.in/

Patent Facilitation Centre (PFC)

Patent Facilitating Centre (PFC) was set up by Department of Science and Technology under Technology Information Forecasting and Assessment Council (TIFAC) in 1995. It provides patent facilities to scientists and technologists in the country for Indian and Foreign patents on a sustained basis. It keeps a watch on developments in the area of IPR and makes important issues known to policy makers, scientists, industry etc. It is also creating awareness and understanding relating to patents and the challenges and opportunities in this area by arranging workshops, seminars, conferences, etc. It has also set up 20 patent information centres all over the country. Website: http://www.indianpatents.org.in/

Patent Information System (PIS)

Government of India, Ministry of Commerce and Industry, Department of Industrial Policy and Promotion established Patent Information System (PIS), in the year 1980 in Nagpur. It maintains a comprehensive collection of patent specification and patent related literature on a world wide basis to meet the needs for technological information, of various users in R&D establishments, Government Organizations, Industries, Business, Inventors and other users. It also provides technological information contained in patents through, search services and patent copy supply service. The search tools available in PIS are Espace/Access, Patents Abstracts of Japan (PAJ), Micropatent, EPC, INPADOC, EPIDOS, GLOBALPAT, US-CAPS/APS, Gazette of India and ESPACE-ACCESS. Patent Documentation (Full text) of countries US, GB, EP, WO, AU, IN and JP are also available. Different categories of patent search facility are also available, such as, state of art search, bibliographic search, English equivalent search, equivalent family patent search, assisted search etc. Website: http://www.patentoffice.nic.in/ipr/pis/pis.htm

Pharmaceutical Export Promotion Council (Pharmexcil)

Pharmaceuticals Export Promotion Council (PHARMEXCIL) has been set up by Ministry of Commerce and Industry, Govt. of India in 2004. The dynamic growth of Indian Pharma Industry, a knowledge based industry, and the recommendations of four major Pharma associations made the Ministry of Commerce & Industry to realize the need for separate export promotion council. In addition to Patent Facilitating Centre (PFC) at Hyderabad, recently on 26th November 2009 another (PFC) is inaugurated at National Institute of Pharmaceutical Education & Research Mohali Punjab. Website: http://www.pharmexcil.com/v1/aspx/Default.aspx

Technology Information, Forecasting & Assessment Council-TIFAC

Technology Information, Forecasting & Assessment Council TIFAC, an autonomous organization under Department of Science and Technology aims to keep a technology watch on global trends and formulating preferred technology options for India. Besides providing assistance for filing patent applications, the centre provides patent search services through three databases viz. Ekaswa-A : Patent applications filed in India, Ekaswa-B : Patent applications notified for opposition and Ekaswa-C: Patent applications published in official journal of patent office from January 2005 onwards. Website: http://www.tifac.org.in/

The National Institute for Intellectual Property Management (NIIPM)

It is a Central Government Organization under the Ministry of Commerce & Industry engaged in conducting training /awareness programs relating to Intellectual Property Rights (IPR) i.e. patents, designs, trademarks & geographical indications in Nagpur. Website: http://www.patentoffice.nic.in/niipm/index.htm

Unit for Research and Development of Information Products (URDIP)

The Council of Scientific and Industrial Research (CSIR) and Department of Biotechnology (DBT), Government of India have jointly set-up a Unit for Research and Development of Information Products (URDIP) at Pune. The mission of URDIP is to develop and distribute science, technology and industry related information products in electronic, online and web based formats. Website: http://www.urdip.res.in/home.htm

Challenges related to patinformatics

- Cost, coverage and resources of patent related database and softwares management
- Selection, acquisition, classification, cataloguing, storage, retrieval and dissemination of patent information.
- Creation, maintenance, storage, preservation and conservation retrieval, dissemination, and disaster preparedness and security of patent information
- Availability of all the patents/ patent applications on single comprehensive source.
- Availability of the accurate legal status of the patent / patent applications at one source or to multiple sources.
- Coverage and availability of non-English patents / patent applications
- Translations and machine translations, technical translations (Expert & Human) and their availability.
- Quality and maintenance management of patent data at various databases
- Requirement of easy, fast accessible, convenient, user-friendly patent database and softwares
- Accessibility and navigation patent database and softwares
- Safety, security, integrity, confidentiality and authenticity of patent database and softwares.
- Better support, training and help system of patent database and softwares
- Regular updates of patent database and softwares.
- Adding new features for potential customers in various commercial and noncommercial patent database and softwares.

Conclusion

In the present paper we have provided the general view on patinformatics, patent information sources, various tools and techniques of patinformatics, which makes analysis of patents an easy task. Various selected patent databases (99 databases), their URLs and their applicability have also been incorporated. The list of many patent offices

(138 offices) and their URLs are also provided. The description of patent softwares, their names (150 softwares), URLs and their applicability has also been discussed. A brief description of patent blogs, (206 patent blogs) and their URLs have also been enlisted. Our article also includes various patent information providers and selected list of Business Process Outsourcing (BPO), Knowledge Process Outsourcing (KPO) and Legal Process Outsourcing (LPO). A brief outline of Indian patent system and some initiatives taken by the Government in the field of patent information have also been mentioned. Patinformatics is the latest area that is now becoming a reality in India too. Till date only advanced countries like US., UK, Japan and a few European countries were working on this, but with the initiatives of Government of India by forming various organizations as discussed above the patinformatics is growing fast. Unit for Research and Development of Information Products (URDIP-CSIR) at Pune is working on various aspects of patinformatics such as creation of subject specific databases, web-enabled services through specialized portals, content creation and software development. Patinformatics is very crucial in today's global and dynamic world of business. Patent information can be used in important areas of technology management. In the present paper we have discussed information to innovation cycle and the various applications of patinformatics in the field of science & technology.

Patinformatics is an emerging discipline that has applications in many areas of science, technology and business. The field is gaining importance progressively. Patent documents contain important research results. However, the analysis of quantum of informations provided by millions of patent and patent applications is a very daunting task. Today, patent databases, patent softwares and patent service providers with their own proprietary value-added patent or technology databases are available for assisting in the analysis of patent information. Automatic tools and techniques for assisting patent professionals or decision makers in patent analysis are in great demand nowadays to make the entire process of patent related activity simple to handle or operate. However, it has been observed that only trained and experienced people can successfully handle the new technologies and the informations enclosed in patents. Scientists have to become more efficient in planning their experiments, have to extract more knowledge from the patent data. Patinformatics tools and techniques can help in this endeavor. In addition to that, it is important that a certain amount of patinformatics should be integrated in to the various curricula of science, technology and business and universities should come forward and start courses related to patinformatics and thereby promoting this newly emerging field of science. Since the awareness is growing day by day about patinformatics, a reasonably good book on various aspects of patinformatics is highly desirable. It is also felt that patinformatics has to be taught in courses of their own to prepare experts in this field for academia and industry. The development of future patinformatics will require a work force with a solid footing in science & technology with an expert grasp of the available computer technology. The science & technology based companies are in good need of people with extensive knowledge of intellectual properties such as patents and the computer skills to handle the data generated by researchers from the research. In addition a number of opportunities are growing for the database producers, software developers and for the patent information professionals/analysts.

Patent information is used by a variety of users and for different reasons. The reasons may be patentability search, bibliographic search, commercial agreement, infringement related studies. This paper aims at providing an updated insight into some aspects of patent information which may be useful for patent professionals in future. There are still many new challenges in the field of patent information which need to be addressed too. Consistent development is the need of knowledge driven economy and we still will see many new developments in patinformatics, which will be taken up in our future work.

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References

(1) http://www.destinationcrm.com/Articles/Editorial/Magazine-Features/Where-Does-Innovation-Come-From3f-60585.aspx

(2) Patinformatics: Identifying Haystacks from Space: A.J. Trippe. Available at http://www.infotoday.com/Searcher/oct02/trippe.htm

(3) Patinformatics: Tasks to tools : A.J. Trippe World Patent Information, Volume 25, Issue 3, September 2003, Pages 211-221

(4) Delphion a world class patent database – A comprehensive analysis from patent information professional's perspective: Amit Kumar Tiwari, Mamta Kumari Raturi and Prabhat Kumar Sahoo. Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1510630

(5) http://customer-relations.suite101.com/article.cfm/analytical_data_mining_techniques

(6) http://acscinf.org/docs/meetings/226nm/presentations/226nm14.pdf

(7) http://en.wikipedia.org/wiki/Visualization_%28computer_graphics%29

(8) Timeline and Crossmap Visualization of Patents: Taotao Sun, Steven A. Morris. Available at http://www.collnet.de/Berlin-2008/SunWIS2008tac.pdf

(9) http://en.wikipedia.org/wiki/Citation_analysis

(10) Developing acquisition strategies based on patent maps: Martin G. Möhrle, Anja Geritz. Available at http://www.iamot.org/conference/index.php/ocs/4/paper/viewFile/1061/452

(11) http://www.thearling.com/text/dmwhite/dmwhite.htm

(12) Data Mining In The Applied World : Anubha Jain, Era Srivastava Available at http://www.asctbhopal.com/Technovista06/Final%20Tech-06/CS/6/6.htm

(13) http://en.wikipedia.org/wiki/Database

(14) http://en.wikipedia.org/wiki/Computer_software

(15) http://en.wikipedia.org/wiki/Blog

(16) http://en.wikipedia.org/wiki/Business_process_outsourcing

(17) http://en.wikipedia.org/wiki/Knowledge_process_outsourcing

(18) http://en.wikipedia.org/wiki/Legal_outsourcing

(19) http://en.wikipedia.org/wiki/Patent

(20) http://ipindia.nic.in/ipr/patent/patents.htm

(21) http://www.wipo.int/edocs/pctndocs/en/2010/pct_news_2010_02.pdf

(22) http://en.wikipedia.org/wiki/Patent_Cooperation_Treaty

(23) http://commerce.nic.in/PressRelease/pressrelease_detail.asp?id=2170

(24) http://www.patentoffice.nic.in/ipirs/patentsearch.htm

(25) http://ipindia.nic.in/ipr/patent/patents.htm

(26) Annual reports of the IPO, 2001 -2008. Available at http://ipindia.nic.in/ipr/patent/patents.htm

(27) http://www.pharmabiz.com/article/detnews.asp?articleid=54252

(28) Patent Litigation Trend in India: Tarun Mathur. Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=995994

Author Details

MR. AMIT KUMAR TIWARI

Mr. Amit Kumar Tiwari, Group Leader – Intellectual Property Management Division (Research and Development) is currently working with Nectar Lifesciences Ltd. Chandigarh. He is a Graduate in Science from Bhopal University Bhopal, Post graduate in Pharmaceutical Chemistry from Devi Ahilya Vishwavidyalaya, Indore. He has done Post Graduate Diploma in Cheminformatics from Institute of Chemiformatics Studies, Noida and Post Graduate Diploma in Patent Law from National Academy of Legal Studies and Research *(*NALSAR*)* University of Law, Hyderabad. Mr. Tiwari is engaged in the field of Intellectual Property primarily in the field of Patents since 9 years. Being a cheminformatician he is actively involved in the field of patinformatics. Mr. Tiwari was associated with premium research institutes such as National Institute of Pharmaceutical Education & Research (Medicinal Chemistry) Mohali Punjab, Regional Research Laboratory (CSIR) Bhopal, Indian Grain Storage & Management Research Institute (IGMRI) Hapur Uttarparadesh, M.P. Council of Science & Technology Bhopal etc for his training and research work. Mr. Tiwari is involved in patent analysis, drafting, filing and prosecuting the patent applications in the field of Generics, more particularly in active pharmaceutical ingredients. Prior to joining Nectar Lifesciences Ltd. he has worked with Medicorp Technologies India Ltd. (Organic Synthesis, Chemical Information, and Patents) Hyderabad, Jubilant Organosys Ltd. (Intellectual Property Management & Information Management) Noida, Orchid Chemicals & Pharmaceuticals Ltd. (Intellectual Property Management) Chennai.

MS. MAMTA KUMARI RATURI

Ms. Mamta Kumari Raturi Research Associate – Intellectual Property Management Division (Research and Development) is currently working with Nectar Lifesciences Ltd. Chandigarh. She is a Graduate in Science; Post graduate (Applied Chemistry) and B.Ed. from Guru Nanak Dev University, Amritsar. Ms. Mamta is recipient of gold medal in B.Sc., M.Sc. and B.Ed. She has done Post Graduate Diploma in Patent Law (first rank and gold medal) from National Academy of Legal Studies and Research *(*NALSAR*)* University of Law, Hyderabad. Prior to joining Nectar Lifesciences Ltd. Ms. Mamta was actively involved in the field of synthesis of active pharmaceutical ingredients (Generics) in Indswift Laboratories Limited Chandigarh. Ms. Mamta is currently engaged in analysis of patents related to pharmaceutical technologies of various active pharmaceutical ingredients.

DR. SUSMITA MUKHERJEE

Dr. Susmita Mukherjee, Senior Executive – Research and Development is currently working with Nectar Lifesciences Ltd. Chandigarh. She is a Graduate (Chemistry Hons.), Post graduate (Organic Chemistry) from Calcutta University, Calcutta and Ph.D. in synthetic organic chemistry from Panjab University, Chandigarh. Dr. Mukherjee has many publications in the field of synthetic organic chemistry, especially in the field of ß-lactams and other heterocyclic compounds. She is actively engaged in analysis of patents related to pharmaceutical technologies of various active pharmaceutical ingredients (Generics). Prior to joining Nectar Lifesciences Ltd. Dr. Susmita has also worked in Institute of Microbial Technology (CSIR) Chandigarh and Pharma Division of Punjab Chemicals & Crop Protection Ltd. Lalru, Punjab.

DR. PRABHAT KUMAR SAHOO

Dr. Prabhat Kumar Sahoo, Vice President – Research and Development is currently working with Nectar Lifesciences Ltd. Chandigarh. He is a Graduate (Science Hons.), Post graduate (Organic Chemistry) from Berhampur University, Orissa, M.Phil and Ph.D. in Chemistry from Delhi University, New Delhi. He is heading and guiding the team of scientists working in Research and Development and Intellectual Property Management Division for developing non infringing processes for active pharmaceutical ingredients (Generics) and their timely protection by filing the patent applications in different countries. Dr. Sahoo is an inventor, investigator and a scientist who has many patents and publications in the field of organic chemistry and pharmaceutical technology. He has worked in companies like J.K.Pharmaceuticals Ltd. Faridabad., Deepharma Ltd. Bhiwadi, Ranbaxy Fine Chemicals Ltd. New Delhi, Aurobindo Pharma Ltd. Hyderabad, Orchid Chemicals and Pharmaceuticals Ltd. Chennai, Alembic Ltd., Vadodara.