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TECH TALK

Is your new idea worth pursuing? Mining oil/gas patent databases

BY GARY BEERS • FOR ENERGY PIPELINE

Every oil/gas company is constantly looking for new ideas that offer a competitive advantage, especially ones that can be patented.

A sound business practice is to review the patent database to be sure the idea can be implemented without infringing on the intellectual property rights of others. To perform this review, an intellectual property expert would be hired to prepare a Freedom to Operate (FTO) opinion, which would cost at least $20,000 to $30,000 ("Freedom to Operate: Knowing if you will likely infringe a patent", G. Quinn, IPWatchdog, June 27, 2017).

The FTO opinion is an evaluation of the result of a data mining process and the outcome should provide actionable intelligence. This distinction is addressed in an article ("IP Landscaping – Creating a Conceptual Fabric of Information", E.P. Raciti, Intellectual Property Today, June 2014) which states:

"…..data divorced from context is meaningless. Fitting the data to a story is what transforms it into information. Information properly interpreted become actionable intelligence."

In 2000, a new, powerful tool (Patent Landscapes) was developed to provide a higher level and broader view than FTO opinions of patents, state of the art, and competitive activity in a particular technical area within a specific geographic region. This output delivered data in a context that included visual relationships among the various patents related to the technical area of interest. The above article describes the utility of this new tool:

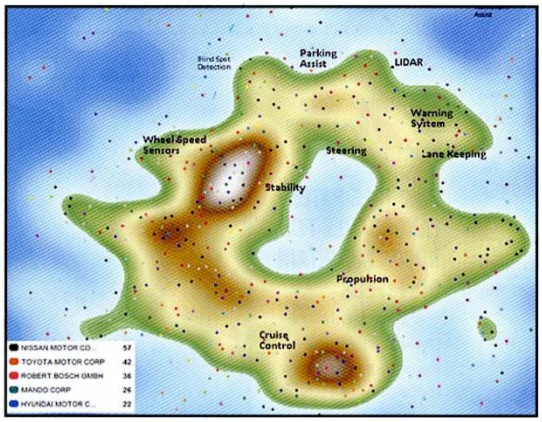
"The results of a patent landscape can be used both offensively and defensively to inform early stage research and development decisions, assist with internal patent portfolio strategy, identify third party roadblocks or licensing opportunities, and gauge competitor positioning. But unlike a geographical map, IP landscapes have no counterpart in reality by which to gauge their accuracy. While an error in a road map or GPS database can lead to misinterpretations or errors in execution, a poorly executed IP landscape can lead to faulty choices that could not only be costly, but also require precious months or years to unravel."

The outcome of the landscaping tool is only as good as the competence of the analyst to formulate the inquiries of big data (i.e., patent databases throughout the world) and understand the details of the subject technical area. Substantial information on patent landscaping and examples of application in many technical areas is available in reports of the World Intellectual Property Organization (WIPO) and numerous commercial websites ("10 Powerful & Simple Patent Landscaping Techniques", ACCLAIM IP, Patent Search & Analytics Software).

PATENT LANDSCAPE FOR DRIVERLESS CAR TECHNOLOGIES

Since most readers are familiar with driverless car technologies, the patent landscape map for

FIGURE 1: PATENT LANDSCAPE REPORT ON AUTONOMOUS CAR-CONTROL MECHANISMS/DRIVERLESS CAR



For over 50 years, **GARY BEERS**, has worked in numerous fields of environmental science as a consultant, regulator and educator. This career included senior management position with major consulting, nonprofit and public organizations. He has founded several successful firms to capture emerging resource management markets. One of his latest ventures, EnviroScienceINFO, provides content for public media.

this technical area is provided as a simple example in Figure 1 which is from "Patent Landscape Report on Autonomous Car-Control Mechanisms/Driverless Car", GridLogics, April 13, 2016.

The basics of the presentation are:

» the rectangular base map represents the scope of various mechanisms used in a driverless car.

» the patents represented by dots are colored-coded by company.

» specific technical clusters are positioned near each other based on degree of relevance based on information contained in the patents.

» the colored areas are contours based on number of patents.

A general reading of this patent landscape could conclude: maximum patent activity is related to mechanisms involving wheel speed sensors and stability with cruise control being the next active patent area. Traffic jam assist and blind spot detection are areas of low patent activity.

MAPPING OF EMERGING TRENDS IN OIL AND GAS TECHNOLOGIES WITH COMMERCIAL POTENTIAL

Recently, the Canadian Intellectual Property Office (CIPO) published a comprehensive report overviewing the patent activity in the shale oil and gas subsector of the oil and gas industry ("Patent Landscape Report. Shale Oil and Gas" CIPO, Innovation, Science, and Economic Development Canada, 2016). For this report, the invention database between 2000 and 2012, which contained over 4,000 published patent families, was analyzed. By convention, a patent family contains all the patents related to a single invention.

This report provided two landscape maps which are combined into a complex map (Figure 2). Two overlays are placed on the basic contour map.

» A dotted line is placed along the valley between the elevated areas of patent clusters related to exploration and development/production.

» Colored ovals enclose highest patent areas by major international companies.

As mentioned above, the results of a patent landscape can be used both offensively and defensively to inform early stage research and development decisions as well as other related business decisions. For example:

» Schlumberger and Halliburton dominate the technologies related to exploration (i.e., drilling and well formation) with direct completion in drilling well formation.

» Idemitsu has a strong presence in two technical areas positioned in development/production with different direct competitors in each area.

If your new idea falls in an elevated area of patent clusters, then the possibility of patent infringement is high and the opportunity for commercialization of your idea may involve an arrangement with companies already holding patents in these technical areas. To a lesser degree, infringement concerns could be present on any of the elevated, non-blue areas.

Conversely, if your area of interest is in the blue area, then there should be opportunities commercialize your patentable idea. As a corollary, the blue areas present opportunities for new ideas. For example, most of the exploration side is nearly covered with elevated landscape due to patent activity while there is a major blue bay in the development/production side along the dotted line that has received little patent interest.

POSSIBLE PATENT LANDSCAPES FOR ROCKY MOUNTAIN OIL FIELDS

Patent landscapes provide key information on emerging technologies with high commercialization potential and opportunities to create barriers for entry of competitors.

A limited search of patent landscape map found only a few related to the oil/gas industry: shale oil and gas technology (presented in this column) and desalination which could be relevant to produced water treatment technologies.

It would be of interest to prepare patent landscapes for technologies related to key issues in Rocky Mountain oil fields, a specific region. These visualizations could help identify technical areas where: company patents are basically in the same patent family and arrangements could be made to jointly to advance existing technology and where new technology is needed. Candidate technical areas could include:

» technologies for management of drill cuttings.

» technologies for management of produced water.

» technologies for horizontal drilling.

» technologies for remediation of petroleum contaminated soils and waters.

» technologies for treating flowback water.

Obviously, a list of firms in the Rocky Mountain Region with capabilities to prepare patent landscape would be very useful. ♠

FIGURE 2: HERE IS AN EXAMPLE OF A PATENT LANDSCAPE MAP