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## IP Strategy Based On Idealized Invention Interview

*Law360, New York (September 02, 2009)* -- A good patent representative always begins an invention interview by asking about the basic purposes and motivations behind the invention.

For the purpose of providing effective patent protection, the aim of the questions is to enumerate the alternative ways the invention's function may be achieved.

The reason for doing so is to discover, and repair if possible, any defects in a patent's ability to control access to a value proposition associated with the invention's function.

The invention interview process elaborates the functions of claim limitations which then serve as starting points for connecting alternative effecters and identifying any that might have been missed.

Ideally, the interview may reproduce or extend some of the critical and creative work behind the invention, such as, design, market vetting and strategic analysis supporting the decision to launch.

In real life, the interview, however, is usually throttled through a busy technical specialist and comprehends only the issues permitted by practical constraints on time, budget and the specialist's particular perspective.

In this paper, I argue that companies should create an internal process modeled on the ideal invention interview and show that its results can be memorialized in a lightweight form I will call a graph.

The graph may be used for knowledge-sharing and brainstorming within a company as well as for communicating with outside legal representatives and other stakeholders.

By displacing existing practices, significant efficiencies and cost-savings can be realized such as by using the graph in place of, or in addition to, conventional invention disclosure forms and for innovation and design.

The process and graph may also contribute materially to the quality of the legal protection. Below, I present the ideal interview process and illustrate how information resulting from it can be captured in a lightweight form.

A good patent application should not only include alternative embodiments for delivering a value proposition, it should describe these at different levels of abstraction, at least to allow claims of different breadth, hedge against adverse claim interpretations in litigation and provide freedom to make claim amendments.

Failure to cover a variety of abstractions weakens applications in countries where freedom to modify claims is very restricted.

The potential for innovations arising from the invention interview process was recognized by John Cronin and other experts in intellectual asset management. Some practices for brainstorming and refining a concept are similar to an invention interview.

An example of such a process is described in U.S. Patent Publication 2001/0049670 to John Cronin (not issued).

Here, Cronin describes an interview that essentially starts with an embodiment of the invention and ascends the “ladder of abstraction” to provide “broader sets of reasons for the invention” that are used to elicit alternatives from the inventor.

The interview descends the ladder to add enabling details and innovate new alternatives.

Cronin’s process results in varied embodiments by creating a branching hierarchy of limitations. Each limitation in this hierarchy is both a function (with respect to one or many more specific effecters) and an effector (with respect to one or many more abstract functions).

Consider an invention for a retail package for food. At an intermediate level of abstraction, the function is that of enclosing food. At a more detailed level, this function may be provided by wrapping in plastic.

An alternative, at the same more detailed level, might be a snap-lid container. So the limitation “enclosing food” is a function with respect to the alternative effecters “plastic wrap” and “snap-lid container.”

The same limitation, however, is also an effector of one (or many more) abstract functions. For example, the limitation, “enclosing food” effects the functions of preventing spills and keeping the food fresh.

To illustrate such a hierarchical graph (one with a directionality, sometimes called a “directed graph”), consider an invention for metal detecting sandals from a 2008 Hammacher Schlemmer catalog. A sandal has a metal detecting coil in the sole. A connected detector circuit, battery and a vibrator are worn on the calf.

An interview would immediately capture the limitations of a metal detector-sandal combination with a separate power module that vibrates to announce a positive detection.

A function effected by combining a detector with a sandal might be combining a detector with any footwear, which may effect combining a detector with any wearable article. More abstractly, the function may be attaching a metal detector to a person.

At the highest level, the function may be to enable metal detecting to be done passively or, alternatively, as an automatic enhancement of another activity.

Each of these levels of abstraction is a point of departure for alternative embodiments, for example, other wearable articles (detector in a pant hem?) and other means of attaching a detector to a person (dragged behind?).

The work of defining the intermediate levels of abstraction is challenging because it involves similar intuition and creativity as inventing. This work, however, is not as comprehensive as actually fleshing out these alternatives, thus valuable work may be done after this framework is mapped out.

For example, at the high level function of passive metal detecting, effected by attaching a metal detector to a person, the suggestion is to ask how could passive metal detecting be done without attaching the metal detector to the user in some way, for example, by locating the metal detector remote from the user?

The idea of locating the metal detector remotely from the user starts to strain the boundaries of common sense, but this is exactly what structured innovation techniques intentionally try to do. With some effort, new and, potentially, even better product ideas could arise.

For example, passive metal detecting could be done with a remote metal detector by dragging the metal detector or attaching the metal detector to a robot or to a pet with a GPS receiver that generates a map of strikes on a PDA.

Wild ideas are proper to consider for patent applications because they can support potentially valuable claims with little marginal cost.

Because these ideas stem from the same proven market drivers (the top level function) as the main embodiment, they are not merely diversions, but opportunities to move beyond the conventional solutions to known problems.

By defining the top level market drivers and linking the effecters beneath them, the graph can serve as a guide for identifying claim opportunities that otherwise might hide under the radar.

Often a product feature that is considered valuable by customers is not intuitively tied to any particularly innovative technical features of the product and no opportunity for protection is found.

But the graph and the effort of creating it can draw connections between such high level features and their effecters which can be aggregated to generate useful claims.

In one real example, a company listed top level market drivers several years after the filing of an application for a new product.

One driver was size, namely, that the product was much smaller than the competition. Tying together the features that give rise to small size provided powerful (because they drive value) and patentable (because multiple features were tied together) claims.

In a directed graph, the function–effector relationships can be mapped and quickly referenced and shared by patent representatives, management, and inventors. There are a variety of tools for drawing and managing graphs, including open source GraphViz and Compendium and private software such as Hypercard and Personalbrain.

As a communication vehicle, directed graphs capturing the content of a patent application are lightweight and highly structured, yet they capture essential information for valuing a patent, collaborating on the content, and strategizing on claims. This is in contrast to unstructured bulky patent and patent claim drafts.

A graph can be prepared before drafting and can even allow a relatively unskilled drafter to draft the patent application. The graph can be preserved for reference later on. The directed graph structure also allows content to be summarized across multiple patent applications in a portfolio.

In addition, by showing, at a high level, the functions of the limitations served by the disclosed effecters, the motivations for the features can be referenced, scrutinized and used as a base for further innovation.

From a practical standpoint, this information may or may not be accessible in a patent. The information contained in a graph may constitute valuable secret information that goes beyond the scope of patent applications so handling procedures should follow guidance by experienced patent counsel.

One of the biggest challenges in introducing structured innovation in the workflow for new product development is that engineers do not see the need for it.

They are rarely hampered by a paucity of solutions for their design challenges so what good is a problem-solving tool? Structured innovation tools should be accompanied by tools for generating challenging strategically valuable problems.

The latter do not arise naturally. Their definition requires insight and creativity. The graph can be used to create such strategically valuable problems.

For example, one may pose the problems such as “Combine (these) multiple functions into a single effecter,” “Remove (this) function,” “Identify the weakness of this wild alternative and compensate or fix it,” and “Remove (this) effecter but keep the function.” Many structured innovation tools, such as TRIZ, are designed to address just these sorts of problems.

The graph and the process can be used in a variety of ways.

- Most obviously, the process and graph capture and convey the information that needs to be in a patent application.
- The graph is in a lightweight form that is not burdensome to create, review, or refine.
- It can be used to communicate and manage the work of patent representatives.
- It captures and shows the relationship among multiple patents and applications as well as proposed patents and conceptions.
- It ties technical details to market drivers and can be used to share knowledge between marketing and technical experts.
- It provides a tool for structured innovation that highlights, organizes and thereby exposes to effective scrutiny, all the basic assumptions for delivering a value proposition.

It is valid and useful for such structured innovation at all levels and across departments, so it may be used to facilitate high level strategy innovation, market innovation, etc. It generates meaningful problems that are compatible with an established understanding of a product's value proposition.

- It can facilitate the identification of patent claim opportunities that provide substantial market power but would otherwise hide under the radar for their lack of obvious technical innovation. This is a staple patent tactic and it is greatly facilitated by the process described.
- The graph can be built around competitor value propositions to develop improvements and hinder their competitiveness or to use as currency for dispute resolution.

- The graph can capture prior art and competitor patents for designing around competitor patents and to eliminate the need for in-licensing.

The described process and graph can integrate with, or displace, existing processes and ultimately lead to added efficiency.

Probably, most compellingly, it captures and puts to use vital information that otherwise sits uselessly in the files of outside patent legal representatives or is effectively entombed in the notoriously inscrutable prose of patents and patent applications.

As such, it corrects defects in the conventional system of procuring patents. The proposed model is a high level description and is susceptible to a variety of different processes and knowledge-sharing instruments that can lead to significant productivity gains and cost reductions.

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