

WHITE PAPER

Views of Inventors & Product Managers on Freedom-To-Operate & Portfolio Enhancement Work Products of Patent Law Firms

Useful focus group findings for law firm partners and in-house counsel
seeking to improve their work products and serve their clients better

Research Sponsored By



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Mr. Steve Lundberg, President
Schwegman, Lundberg, & Woessner, PA

Dear Patent Professional,

We are proud to share the results of our market research on freedom-to-operate and portfolio enhancement work products of law firms with our clients and professional peers.

Like many patent law firms, we talk to our clients daily about the nuts and bolts of current projects, but we don't formally ask for feedback and insights into our work from the customer's perspective often enough.

When Venture Isles proposed customer research as part of business development planning we quickly agreed to sponsor the study. We decided to share it with the profession and our customers to improve the profession and perhaps to raise the bar of customer expectations.

We are confident we can clear a higher bar with room to spare thanks to the productivity and quality of our innovative software-enabled claim mapping for freedom-to-operate, portfolio enhancement, patentability, and claim-issuance forecasting.

Your feedback on the study and our new work process are welcome.

Sincerely

A handwritten signature in black ink that reads 'Steve Lundberg'. The signature is written in a cursive, slightly slanted style.

Steve Lundberg, J.D.
President

Views of Technical Inventors & Product Managers on
Freedom-To-Operate & Portfolio Enhancement
Work Products of Patent Law Firms

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**“Where a new invention promises to be useful, it
ought to be tried.”**

Thomas Jefferson

**“I’ve been at a company noticed for infringement.
Fortunately it wasn’t my department.”**

Technical Inventor

Executive Summary

Introduction

Patent claims analysis for freedom-to-operate and portfolio enhancement is an important part of the work of many intellectual property law departments and firms. Our research sought to gain insights into the customer's perceptions of the process and products of this complex and technical professional specialty. The results can be applied to help improve professional practices, generate more value and satisfy clients.

We chose to focus on the views of technical inventors and product managers. Our hypothesis was that they're at the hub of innovation in their companies from technology and commercial perspectives. Inventors collaborate with patent attorneys on prosecution and often on clearance too. Product managers nurture innovations, drive schedules and manage costs and risks in getting a new product to market. They want to sustain the value of innovation through patents and minimize the risks of infringement and the costs of licensing the patents of others.

To obtain their views we conducted a focus group of inventors and another for product managers. The method allowed the participants to interact with each other and the moderator in an unstructured way for deeper understanding.

We sought input on the challenges of looking at the patents of others to understand a technology landscape and to identify the needs for design-a-rounds to gain "freedom to operate" (FTO) without licensing the patents of others. We also wanted to learn the challenges they face in understanding and managing their business' patent portfolio.

The participants were able to help us better understand the inter- and intra-organizational challenges of product clearance and portfolio enhancement. Such work crosses functions and organizational boundaries. It is work for which many in their roles have little or no formal education.

Summary of General Findings

Trends

- Innovation is becoming more important in gaining competitive advantage.
- Formal and informal FTO are moving earlier in the new product process.
- Respect for value of patenting is rebounding.

Opportunities

- Grow market by educating entrepreneurs about FTO & reaching out to design firms.
- Develop claim chart that serves both FTO and prosecution. "Two uses, one investment."
- Midsize companies may have the most challenges with FTO.
- Process innovations to cut costs and increase quality.

Threats

- More pressure to manage down external legal costs.
- Internal engineers and patent agents doing FTO screening.

Selection/Retention of Outside Law Firms

- Product managers influence of the evaluation of counsel. Inventors influence prosecution services.
- People in these two roles are usually not lead decision-maker.
- Administrative hassles of changing firms favor retention.
- Guidance of attorney wanted by those doing more FTO in-house with engineers.

Views on Traditional FTO Claims Analysis

Participants in both focus group indicated they were familiar with FTO or product clearance process and work products. This was borne out with their later comments and questions, though discussion bounced between FTO and prosecution several times.

Key findings are summarized below.

Positive

- Risk management process important enough to be standard operating procedure.
- High levels of trust with current attorneys.
- FTO information is useful in portfolio enhancement.

Negative

- Studies take too long and slow development of new products.
- Reports are outdated the day they are completed.
- Don't like reading piles of patents.
- Reports with too much extraneous information.
- Keeping track of dialog with attorneys is burdensome and documentation is poor.
- High cost.
- Entrepreneurs may not even know about FTO.
- Communication with attorney is often second-hand.

Observations

- "Do it yourself" claims analysis is accepted at early stages.
- Claim analysis by non-attorneys is used to cut costs.
- Use of attorneys is delayed as long as possible in the development process.
- Internal staff resources are viewed as "free" and outside counsel as a hard cost.
- Learning of infringement after a product you manage is on the market is not good for one's career.

Views on ClaimScope™ Interactive Claim Charts

Participants were shown an example of the proprietary ClaimScope chart and other exhibits. The moderator explained the process and output and how it differs from traditional ones. Some of the exhibits are in Appendix A and others are online or available by request.

Key findings are summarized below.

How do you describe ClaimScope?

- “It aggregates all the relevant patents and shows me the pathway to avoid infringement. The green lights show me where to go. If I avoid the few red scope concepts the entire portfolio of related patents goes away. To me it provides good clarity on what you need to do to avoid infringement.”
- “It’s a visual tool. I would call it a strategic approach. It tells me in one fell swoop that if I avoid specific features I’ve got a green light. It tells me early if I’m headed down the right path.”
- “Easier to see technical concepts in this chart than the traditional method.”
- “It’s a visual tool that allows people from different functions to work together.”
- “It’s a discussion tool for the designer and the attorney.”
- “It’s a disruptive innovation.”

Business Benefits

- “The value of this tool is helping you focus on the areas where you really should invest some money to avoid infringement, instead of just smearing it around the whole pile of patents.”
- “I see the map as a way of making business decisions and setting strategy.”
- “I like how it shows the timeline of claim development, from broader early patents to more narrow ones later. It helped me see how the patent landscape has evolved.”
- “If you work in the same technical space you’ll build up a reusable database.”
- What if IBM’s patent portfolio was mapped this way? Then small companies could make better decisions on whether to pay-up on a licensing demand.

Technology Development Benefits

- “It’s exciting for nerds like us to see patterns in the technology and claims.”
- “I’ve worked on teams where I was ‘kept clean’ by not reading patents of others per company policy to avoid any appearance of willful infringement. But this means some of our best innovators can’t help design workarounds. Using this map we are putting concepts in front of the inventor and not claim text.”

Personal Benefits

- “It’s a working tool for me. I can quickly screen patents and move on.”
- “Now I don’t have to sift through all those patents. If there is a question I can click and read the claim.”
- “I can use it as the product design develops.”
- “It’s a great way to show patent information and focus on what’s important. It’s much better than reading a pile of documents.”

Portfolio Enhancement Applications of ClaimScope

- “Claim issuance forecasting can be very valuable in acquisition due diligence.”
- “Claim issuance forecasting can improve patent applications.”
- “Paying for patents that don’t protect a competitive advantage is a waste. This map shows those patents and provides a clear rationale for the decision. Now no one wants to stick their neck out and abandon or sell a patent fearing it later would be found important.”
- “Companies could use it to identify licensing prospects and zoom in on the best ones. Licensing is big bucks.”
- “The low hanging fruit in selling this system would be in-house attorneys and patent agents.”
- “Big companies have trouble keeping track if their patent claims apply to their products. Mapping by scope concept can speed this process.”
- “We could use it to create blocking patents to slow our competitors.”

Positive Comments on ClaimScope

- “Very thorough.”
- “Laid out nicely.”
- “I think it has potential.”
- “It gives me a sense of direction.”
- “Very systematic, leaving no stone unturned.”
- Expressed willingness to recommend ClaimScope to their lawyers.

Concerns Raised About ClaimScope

- Will all scope concepts be found? Will they be properly mapped?
- Does it reduce legal costs?
- If the design changes do you have to go back and re-do the claim mapping?
- How can evaluating a claim take only three minutes?
- Quality of patent source database.
- Has it been used with customers yet?

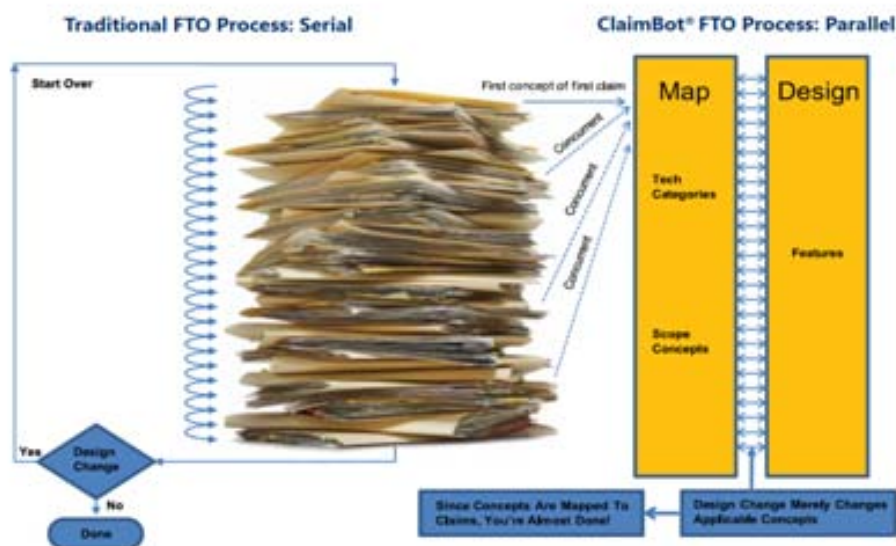
- Ask your client is it a tool for guiding innovation, a replacement for traditional FTO analysis, or a way to get good claims on a new patent?
- Having a third-party do mapping for their current law firm would have to be that firm's idea because of quality concerns and existing relationships. Splitting patent prosecution and FTO between two firms may be a challenge.

ClaimScope Improvement Ideas from Participants

- From their own experiences they stressed the need for user-friendly interfaces (GUI) and clean design of maps and reports. Attractiveness and user-friendly mattered to them in their own products based on their focus group research.
- “ClaimScope-light” for use in-house by engineers may build internal demand for changing to a law firm that uses the fully-enabled version. Do-it-yourselfers are trying to do FTO screening without any tools other than Google.
- Reverse application: Use to determine which of a company's or competitor's patents are being practiced.
- More rating factors for “red” scope concepts such as: cost of a work around; whether it's implemented in any product; and a score for litigation propensity of claim owners.
- Integrate or overlay data from patent landscaping and statistical patent quality assessment tools by leading analytics providers.

Participants had a generally positive response to the ClaimScope work product. If their concerns were answered, they'd likely become champions for it in their organizations. ClaimScope lets the patent attorney meet their client collaborator where they are comfortable—the product specification—instead of over the claim language which is the lawyer's “home court”.

Traditional and New



Research Findings

Technical Inventor Focus Group

High tech inventors saw freedom-to-operate (FTO) analysis of active patents as standard operating procedure but complained that it takes too long in today's fast paced business environment. They wanted clearance feedback faster and in formats that saved them time and gave them just the information they needed to know. They saw FTO reports as obsolete as soon as they are completed.

“The big limitation of FTO is that it is just a snapshot in time. It is outdated immediately as new patents are published. It's a real challenge.”

—Technical Inventor

The inventors quickly got the concept of the ClaimScope™ interactive chart from a lay person's brief “point and talk” description but the work process behind it took longer to understand. However, they were only shown a paper chart, so they did not see the chart's interactivity, only hearing about it in the moderator's description. They were not shown the attorney user-interfaces.

Two inventors noted they had seen similar charts before and, since four were from clients of the firm sponsoring the research, they may well have been generated by that firm. Participants saw the new type of interactive chart as clear, systematic, thorough, orienting and time saving. They thought it helped focus legal resources on what matters. They liked seeing the historical progression of scope concepts on the chart.

“Mid-sized companies may have the most challenges with FTO”

—Technical Inventor

The inventors described ClaimScope as a business decision tool that facilitates a more productive dialog between the inventor and the patent attorney. It was also described as a strategy development tool and a cross-functional discussion tool.

Legal concepts sometimes got jumbled and the inventors were more familiar with patent prosecution than detailed FTO analysis. It seemed the inventors were working on a patent application at the same time they were doing clearance on the new product. Inventors were interested in patent prosecution uses of ClaimScope, including assessing the likelihood of getting broad claims through the patent office and planning continuations-in-part (CIP).

Participants' questions reflected a respect for the importance of product clearance and patent prosecution. Like any buyer they wanted to know about the quality of the mapping of claims to scope concepts and in the accuracy in determination of whether a scope concept was implemented in a product or not. They wanted reassurance that all relevant patents had been mapped, even those from unrelated domains. They wanted reassurance that all scope concepts had been found. They didn't want to use the charts by themselves; they wanted their patent attorney to be there, in dialog with them. They wanted a patent attorney that understood the technology, which the scope concept method may make even more important in their view.

“Lesson: Even if you are small you have to pay attention to FTO or pay the price down the road.”

—Technical Inventor

There was lots of interest in how design-a-rounds would be cleared by the ClaimScope interactive chart system. There was skepticism that all the patents relevant for the design

change would already be in the mapped portfolio. They were concerned that another round of mapping would be costly, more work for them, and put them behind schedule.

Participants who identified themselves as designers expressed more concern with FTO than engineers. This may be because designers work in more domains than an engineer and therefore don't know the lay of the land in one domain as deeply. Or the designers are consultants (not staff like engineers) so a consultant's client receiving a notice of infringement after product launch would not help the consultant's reputation or repeat business.

“We work at a fast pace. Speed matters.”

—Technical Inventor

Corporate policies designed to prevent a company from accusations of willful infringement often precludes staff from viewing patents of others. This creates information silos around product clearance and technology analysis of competitor's claims that reduce the talent pool to solve technical challenges or develop FTO workarounds. If scope concepts can be positioned as neutral ground that would bring the full team back to clearance work, this would appeal to inventors.

Inventors are naturally interested in patent prosecution and technology trend analysis. FTO is part of their jobs but they don't drive it or manage its cost or supplier. They would likely give positive feedback about an attorney using ClaimScope as it saves them time and gives them a more important role in the process.

Product Manger Focus Group

Product managers shared their conviction that innovation has become more important to the success of their companies. Their job is to drive that innovation. Protecting their innovations as a competitive advantage is important to these product managers. Moreover, knock-offs of their new products are a personal affront to them as they sweated to create those innovations and get them to market. They believe patents are becoming more important to their company's marketing success, even for small and mid-size firms.

“More and more IP is the raison d'être of our company”

—Product Manager

Product managers are responsible for making sure their company has FTO before releasing a product to market. Most companies around the table have FTO as a standard step in their new product development process. Some had been notified that a product of theirs may infringe on a patent of another company. Participants had a fairly sophisticated understanding of FTO and patent prosecution, generally more so than inventors. Like inventors, product managers are dealing with FTO and patent applications at the same time. This is an opportunity to position claim maps as tools for both purposes, but with only one investment.

Participants reported the trend is to do FTO earlier in the product development process. Most do an internal FTO very early by engineers or in-house specialists, though they recognize they may not have the skills or knowledge to do it well. Keeping track of multiple clearance issues for multiple products presents many challenges to product mangers such as sorting out the email traffic with attorneys in order to understand issues and to document decisions.

Product managers shared that they are under pressure to manage down legal costs and while they do generate requests for legal support, they do not select outside law firms nor directly fund the cost out of their budgets. Product managers coordinate the work of engineers, internal patent lawyers and agents and outside law firms. They respect the expertise of their patent lawyers and generally have good working relationships with them. Changing patent firms to get access to ClaimScope was viewed as a big obstacle to adoption of the system by a participant.

As marketing professionals they understandably asked questions about the target market and distribution model of our client's service. ClaimScope's cost savings was viewed as the key value proposition for the system. It was described as a visual tool that provides a strategic view of patent information. It was viewed as a tool to help them do their jobs faster and facilitate collaboration across functions. It provided "clarity." They saw that it is a disruptive innovation for patent law firms with significant implications to the legal business model.

"It's surprising what claims are already out there"

—Product Manager

Participants asked questions about ClaimScope related to cost, how it works, quality and how design changes are handled. After a 10 minute introduction by the moderator over a poster-sized hard copy of a ClaimScope chart, they seemed to grasp the concept. The 18-minute video overview by a patent attorney seemed to reinforce the learning but some were a bit antsy by the end of it. They were there to talk.

Differences between Views of Inventors & Product Managers

| Inventors | Product Managers |
|--|--|
| Personally involved in FTO review because they best know the technology and often work with the patent attorney. | FTO is a checklist item for product managers |
| Inventors were more interested in the company's patent portfolio than product managers | Want their innovations protected and brought to market w/o the subsequent discovery of infringement leading to a disrupting product change (or licensing cost). Some product managers seemed less of a direct user collaborating with their patent attorney on technical, work-around issues. |
| Inventors are interested in the technology landscape | Product managers seemed less interested in learning the technology landscape, big picture, than the inventors. Instead they may have their heads down chugging away getting a new product out the door. They revealed being more process managers than technical experts. |
| Interested in the competition's patents | Interested in the competition's patents |
| Had questions on the impact of design changes on ClaimScope work products, process and cost (re-mapping). | Had questions on the impact of design changes on ClaimScope work products, process and cost (re-mapping). |
| | Fewer functional ClaimScope™ process/product improvements were suggested by product managers than by the inventors group but there was more discussion of the packaging, promotion, price, and distribution by the product managers |
| | Product managers care about cost, schedule and beating the competition |
| | Protecting innovations from knock-offs is a hot button |

“It just doesn’t make any sense to risk a lawsuit on a new product that’s just coming out.”

—Technical Inventor

Methodology

Research Objectives

- Gain an understanding of the FTO process from the customer’s perspective.
- Hear the language that customers use in talking about FTO.
- Gain insights to the customer’s work processes.
- Listen for ways to improve FTO work products and services.

Methodology

- Focus groups were selected as the qualitative research method best suited to the research objectives
 - “A focus group is a form of qualitative research in which a group of people are asked about their perceptions, opinions, beliefs and attitudes towards a product, service, concept, advertisement, idea, or packaging¹. Questions are asked in an interactive group setting where participants are free to talk with other group members. The first focus groups were created at the Bureau of Applied Social Research in the USA, by associate director, sociologist Robert K. Merton. The term itself was coined by psychologist and marketing expert Ernest Dichter.²”
 - A focus group is an interview, conducted by a trained moderator, among a small group of respondents. The interview is conducted in an unstructured and natural way where respondents are free to give views from any aspect.
- Separate focus groups were held for technical inventors and product managers residing in the Minneapolis-St. Paul Metropolitan Area.
- Technical inventors were recruited from a pool of people listed as an inventor on US patents in high technology patent classes. N= Seven participants. All were inventors on at least four high-tech patents, most were on several and one was on over twenty. Four were inventors on patents of clients of the research sponsor and three were recruited through Venture Isles’ network. Notable were: MedTech, defense, software, fire safety, and construction fields and medical doctor, MIT engineer, MIT Sloan MBA. Most had spent their careers at large technology companies.
- Product Managers were recruited from the membership of the *Product Development Management Association* and its LinkedIn® group. N = Eight participants. At least two are currently at client companies of the research sponsor. Some were also inventors in their past (three on patents). One kept an inventor’s notebook as a

¹ Henderson, Naomi R. (2009). *Managing Moderator Stress: Take a Deep Breath. You Can Do This!*. Marketing Research, Vol. 21 Issue 1, p28-29.

² Michael T. Kaufman (February 24, 2003). "Robert K. Merton, Versatile Sociologist and Father of the Focus Group, Dies at 92". *The New York Times*. <http://www.nytimes.com/2003/02/24/nyregion/robert-k-merton-versatile-sociologist-and-father-of-the-focus-group-dies-at-92.html>.

child. Current or past product areas included: MedTech, communication equipment, business products, building products (3), building controls, and industrial products.

- Participants were from different industries so no direct competitors would be in the same focus group. After self-introductions at the start of the session another conflict check was held and none were reported.
- Ninety-minute focus groups were held September 9, 2011 at the FieldWorks® focus group facility in Edina, Minnesota. Participants received a \$125 honorarium and a commitment that they and their employers would not be identified by name and that their images would not be published. The sessions were videotaped.
- Expectations / How to participate in the discussion were set by the moderator at the beginning of each session.
 - One speaker at a time
 - Take turns but do join in
 - I may call on you
 - Okay to have views different than others in the group
 - There are no right or wrong answers
- Exhibits included large-format claim charts, documents, PowerPoint slides and video of a webinar.
- The moderator summarized the comments of the respondents, created summary reports and wrote this white paper.
- Participants were told that a patent law firm is seeking to improve the value of its services to clients. The firm engaged Venture Isles to conduct market research using focus groups and other techniques to capture the voice of the client. The identity of the firm was not shared with clients. The moderator noted that the firm can't change patent law or the patent office, but it can provide better service and work products to its clients.
- Participants were made more comfortable with talking through an introduction activity, in which they were asked, "Tell us what types of products you currently work on and what you invented as a child? I invented an automatic forest fire putter-outer. We never had to leave the Ranger Station."
- Detailed guidance was prepared for the moderator for each section of the discussion, but all descriptions of current professional practice and the firm's new methodology were extemporaneous. An 18-minute video was used for the product manager focus group to demonstrate the dynamic aspects of the claim charts. It was not used for the inventor's session.

Discussion Guide and Data

Evaluating Patents of Others

Moderator: We want your input on the challenges of looking at the patents of others. There are three reasons to look at the patents of others that we are going to discuss. First is FTO or product clearance to verify your firm has the "freedom-to-operate" without licensing the patents of others or doing "design-a-rounds." We are going to look at current professional practice for FTOs and then a new process to do FTOs. A second reason to look at patents of others is to understand whether claims for your new invention are already claimed. Thirdly, looking at the patents of others provides insight into the technology landscape and trends there.

FTO/Product Clearance—Current Professional Practice

Freedom-to-operate or FTO also called “product clearance “in some firms, means that your firm’s product features or design does not infringe on patent claims owned by others. Should I elaborate on this definition?

Text in regular font is a moderator’s digest of participant comments or observation

Text in *italic* is a quote from participants

| Product Manager | Technical Inventors |
|--|---|
| Participants were familiar with FTO Concept. | Participants seemed aware of and to understand the concept of FTO. None asked for further definition. |

1. Describe when clearances are done in your new product development process?

| Product Manager | Technical Inventors |
|--|--|
| <i>Depends upon how IP heavy the product is, usually we do it at the first prototype, by then we know the product form and technology. (Displays)</i> | FTO occurs later in process. In-house search first; early, rough estimate. |
| <i>We would do it before doing a prototype, not long after doing IP generation and ranking of ideas. We do the initial screen in-house. As we get further we use outside patent counsel. (Building products)</i> | Formal FTO occurred much later in process. Sees FTO as more formal. More resources are put into an FTO. |
| <i>At the product conceptualization point we do a two-page summary, then we do an internal review of FTO, patentability and competitive review. We go to outside counsel in early design but still pre-prototype. (Industrial)</i> | Most of their employers used stage-gate process in new product development and FTO is one of the gates. |
| <i>We have a stage-gate process. Early we have in-house patent agent do a FTO and explore patenting opportunities. (Building products)</i> | FTO occurs later in process. In-house search first; early, rough estimate. |
| <i>We were doing incremental improvements to existing products. We would look at our own patents and those of others to see if there was room for improvement claims. (Building controls)</i> | Formal FTO occurred much later in process. See FTO as more formal. More resources are put into an FTO. |
| <i>Our engineers would do the first screen early for patentability, value (but not FTO). Then it went to a committee for review...We did FTO before our patents issued and before we spent on development. (Electronics)</i> | Saw literature search as part of early FTO. Then patent database search. FTO is a standard operating procedure in all participants’ firms. They put off patent lawyer costs as long as they could. |
| <i>We are a young company, new processes. Patentability evaluation is moving earlier and earlier in the process. It’s surprising what claims are already out there. We use stage-gate light/lean. FTO is moving earlier too. (Building products)</i> | |
| <i>We use “Mine Manager” to search patent database early in-house. For advanced or radical innovations we do soft clearance very early. (MedTech)</i> | |

2. Has the patent landscape and IP become more important in your work? If so, how?

| Product Manager | Technical Inventors |
|--|---|
| <i>More and more IP is the raison d'être of our company. (Displays)</i> | As an inventor at big tech company I was not involved much in patent landscaping. As a small-business owner we developed an in-house capability to analyze and chart the claim landscape, especially for valuation and licensing purposes. <i>Though, sometimes we did FTO after the product shipped. We didn't use analysis to steer our invention process. It was only after the fact.</i> |
| <i>Google bought my former employer for their patents. (Communications)</i> | <i>Early in my career a blocking patent was a "hard stop." Now with more experience in cross-licensing I know there are options.</i> |
| <i>The importance of patents has trickled down from big companies to small and mid-size firms. Our industry has become more competitive so innovation has become more important to differentiate our products. We put more teeth into our IP because we are an innovation leader and are often copied. We look at patentability so early because of this. All else being equal between new products, we will take the one with the best IP potential. (Displays)</i> | <i>I've found that you have to be inventing for implementation 10 years out. Otherwise the prior art and FTO are obstacles to owning and implementing the innovation. I look to be on the edge of what people think is possible, more Star Trek. (Moderator-Not pursuing incremental improvements but ones that are potentially disruptive to the prior art). Working further out is more effective than working around blocking patents.</i> |
| <i>IP got less important for a while as manufacturing moved to Asia and we thought enforcement was futile. We used trade secrets more then. But it has risen in importance recently as enforcement has improved globally. (Communications)</i> | I've found that years ago broad patents in our field kept us and others out of a product area. More recently companies seem to be willing to risk infringement damages in order to get into a profitable market. There have been some big (several \$100 million) settlements in cases like this. |
| <i>It depends on the level of maturity of the industry. XXXXXX are a mature technology. We have used material patents and others to differentiate ourselves in a crowded industry. But it is harder and harder to get...</i> | I worked at a company that set up a licensing division to monetize patents not being practiced and they didn't involve the inventors. |
| <i>IP in a mature industry. It has been challenging for us to use patents to set...</i> | <i>We learned at the Sloan business school that you can't rely on patents alone to protect your competitive positioning.</i> |
| <i>ourselves apart. We can do design patents but utility and material patents are stronger. (Building products)</i> | <i>We have started selling our innovations as trade secrets and not patenting them. We sold the substantiation of the proof-of-concept. We've gotten our first check. Others: You must have had the street cred that you could deliver.</i> |
| | Discussion of impact of First-to-file vs. First-to-invent on patent filing occurred. Legislative action in Congress was in the news that day or the previous day. |

3. Have you worked at a company that has been notified of (“noticed”) or sued for patent infringement?

| Product Manager | Technical Inventors |
|---|---|
| <i>I had one when I was at XXXX (large industrial company). I was the product manager and was notified. I thought it looked like infringement and so did counsel...</i> | <i>I've been at a company noticed for infringement. Fortunately it was not my department.</i> |
| <i>But it turned out the company that notified us was infringing one of our patents. (Industrial)</i> | <i>Most big companies have been noticed, especially in competitive industries.</i> |

a. What was different afterwards?

| Product Manager | Technical Inventors |
|---|---|
| Most companies around the table have FTO as a standard step in their new development process. | <p><i>People believe there is a proliferation of patents and it's almost hopeless to avoid patents of others no matter how much patent landscaping one does.</i></p> <p><i>A bar-code technology start-up grew from garage to mid-size and was then acquired. But then it lost a patent infringement suit over a method to activate a bar-code reader. This severely impaired the growth of this company, it paid treble damages and had to brand the product OEM. The infringer was punished financially and in market share. Lesson: Even If you are small you have to pay attention to FTO or pay the price down the road.</i></p> |

4. What challenges come up with FTO studies? What does a product manager have to watch for?

| Product Manager | Technical Inventors |
|--|---|
| <i>I trust our attorneys after working with them for so long. I expect them to guide new product managers through the process. (Displays)</i> | One design firm representative does what clients want, but is very aware of FTO. Designer asserted they could design around any patent. |
| <i>I tell my product managers, “don't assume..” If there is any question now, let's vet it now before we get further along the process and run into a “hard stop.” (Industrial)</i> | <i>I've had two clients who didn't know what FTO was. They thought, “We searched for prior art and have a patent, what else do we need?”</i> |
| <i>That's why we get the patent agents involved early. My engineers don't have the time or training to do it in depth. I've encouraged some engineers to become patent agents. (MedTech)</i> | <i>If you are a start-up company, no one is going to fund you unless you can show you have freedom-to-operate. If you are a large, established company you have a patent portfolio to cross-license. Large organizations tend to assume they have or can get FTO. Academic labs ignore FTO. Medium-sized companies may have the most challenges with FTO.</i> |
| | <i>Some areas are less crowded with patents. Products that are first to market with an innovation have less issue with FTO than later, incremental improvements.</i> |
| | <i>The big limitation of FTO is that it is just a snapshot in time. It is outdated immediately as new patents are published. It's a real challenge.</i> |

5. Are you responsible for the budgets for FTO?

| Product Manager | Technical Inventors |
|--|---------------------|
| <i>Other departments like marketing or R&D fund it in my experience. But I drive the utilization and therefore cost. (Building products)</i> | |
| <i>It's the in-house counsel's budget in our company. They decide when to go outside for assistance. (Building products)</i> | |
| <i>It goes through our shared services budget and then is back-charged to my department or to the engineering group. (Industrial)</i> | |

6. Current professional practice for FTO opinions is to conduct keyword or semantic searches of patent databases and then write linear narratives with summaries of close or blocking patents. The document becomes outdated as new patents are issued. Sometimes the process is an engineer and attorney going through patents one by one.

Exhibit: Slide 1 CURRENT FTO stack of folders image (Appendix B).

a. Does this sound like what you have experience? Why or Why not?

| Product Manager | Technical Inventors |
|--------------------|---|
| General agreement. | A participant confused obtaining patent protection of an innovation with FTO. |
| | <i>In my experience at a big tech company, 80% of patents did not cover current products, they were expensive recognition plaques for inventors, or were trading chips when cross-licenses were needed. Only 20% of the patents covered products.</i> |
| | <i>I can't remember ever changing a design because of we didn't have FTO in my long career at a big tech company. Only twice to I recall paying license fees, mostly we cross-licensed something in the portfolio. The same company won large damages in asserting its patents. Inventors were more involved in prosecution of new patents.</i> |
| | <i>I also can't remember changing a design because of FTO concerns. I frequently used FTO reports in drafting continuations and new patents. Moderator—You used FTO information more in improving your own patents than in avoiding infringing patents of others.</i> |
| | <i>My design firm is very cognizant of other patents out there and we have changed designs to avoid patents of others. We work with our client's patent attorney on FTO. We get direction to make it do what the other product does in a different way. Our clients make the final decision on risk of infringement.</i> |
| | <i>It just doesn't make any sense to risk a lawsuit on a new product that's just coming out.</i> |

7. What would you like to see in the FTO work products from your lawyer? What’s good, what’s bad, what’s missing, what’s frustrating?

| Product Manager | Technical Inventors |
|--|--|
| <i>We have multiple projects running concurrently. This results in multiple email threads running with different attorneys... back and forth as the design evolves. It's hard to keep track of. (Displays)</i> | <i>We are working at a fast pace and don't directly talk to the patent attorney, our client does that. Our client shares design with attorney and we get a yes/no answer third hand. Speed matters.</i> |
| | One thing that’s helpful is to chart out patents in specific technology area over time to see trends and try to predict what’s going to happen. |
| Moderator: Two or three participant’s companies have in-house patent agents. | Our R&D group would do large patent landscape maps going back a decade to show where the activity was and who the actors were. They were claim maps. The purpose was R&D planning. |
| | <i>Sometimes trade secrets are better than patents as competitors don't learn and are not signaled by the patent applications or issued patents. This is an issue companies should keep in mind, especially when they won't be going to market early in the patent's term.</i> |
| | <i>Patents are open source.</i> |

NEW FTO Process & Claim Chart Visualization

(Moderator Brief, actual explanation extemporaneous)

This chart (Antenna EXHIBIT hard copy large-format map) shows the results of an FTO claims analysis presented as a matrix of scope concepts by patent claim. It’s for clearing a new antenna product. Each patent as a column and claims are sub-columns. Each row is a category of claim clauses. Traditional claims charts use full text of claims as the rows.

Categories of claims clauses are called *Scope Concepts* in this methodology. Sometimes they are called claim limitations by patent attorneys. Scope concepts are technical or product attributes described in concise English and not in the legal language of claims. They are abstracted by an attorney from claims of relevant patents or patent applications from countries of interest. Software keeps track of the clauses in claims that the scope concept is “mapped to” by the attorney. This is not yet clearance, but it creates the data on which clearance decisions are made.

It has proven faster for an attorney to abstract scope concepts from a claim than to do claim-by-claim clearance decisions by a factor of 4 to 10. This significant productivity gain can be used to review more patents—for a more rigorous FTO—or to lower the cost of the FTO.

An outline of scope concepts are usually developed by the patent attorney with input from the technical team. More emerge while reading the claims. New ones can be created at any time to cover design changes or publication of new patents and applications owned by others.

The abstraction process means that a much smaller number of scope concepts are used in clearance decision-making compared to the number of claims that may be relevant to the product being cleared. As you may recall, all clauses or steps in a claim must be included before you can use the courts to prevent others from practicing the claimed invention. Therefore if one element of a claim is not part of the product to be cleared, the entire claim becomes irrelevant and can be removed from further analysis.

You sit with your attorney and walk through the scope concepts and decide if they apply to the product being cleared. Each one that doesn't apply means that all claims linked to that scope concept are irrelevant to your product. The software eliminates them from the matrix so you can focus your attention on the ones that remain. Instead of clearing claims as whole units, it is done by scope concepts linked to claims. Clearing a scope concept clears one to dozens of claims.

The new process is iterative. The first round uses more general scope concepts. Sometimes more fine-grained concepts added in later rounds which can make more patents irrelevant to the product being cleared. A handful of claims that remain go through a final round of traditional detailed analysis by your attorney, looking at invalidity, etc., but there are usually fewer to review. New patents and scope concepts can be added at any time, so it can be kept fresh.

The cells of the matrix are color coded to show the user's evaluation of the level of relevance of the scope concept to the feature of the product being cleared. A cell would be blank if a patent claim does not include that row's scope concept.

To aid interpretation, green cells mean a scope concept is not found in your product and therefore the claims with that scope concept are cleared. Red cells mean the scope concepts are in your product, so the associated claims are still not cleared. The patent may still be cleared with the next iteration of analysis with more detailed scope concepts (no opinion is offered on infringement by the system or the output). Yellow cells mean the user should review the claim text and product specification to make a judgment on a "close call." The actual claim text is linked to the spreadsheet cell so they can be referenced with a mouse-click. The output is an Excel spreadsheet template so end-users don't need any special software.

Scope concept mapping diagram shown on screen. Moderator did a 10-minute layperson's explanation of the new ClaimScope system output and its use by clients (See Appendix B).

Moderator: Group then gathered around ClaimScope sample chart (antennas) and moderator described the chart and how it's developed and used to them in less than five minutes (See slwip.com/antenna to see the antenna chart).

8. Are the matrix framework and the concept of scope concepts making sense to you?
 - a. What is confusing?

| Product Manager | Technical Inventors |
|--|---|
| <i>Where does the scope concept come from? Who does it?</i> | <i>Does the chart change the way the patent attorney works?</i> |
| <i>Do you have to enter data into the system?</i> | Patent jargon is still in some of the scope concepts "plurality of" |
| <i>The example of mapping the scope concepts does not include some key terms that are in the claim. Why not and who decides? The example was</i> | <i>How do you know all the scope concepts were found? A crochet stitch and my electrician's braid are the same thing, so would they be found in this (or any) FTO? That's the scary part of FTO (Nervous laughter from participants). I like to think of cross-</i> |

| Product Manager | Technical Inventors |
|--|---|
| spinal fusion so the terminology was medical and technical so it was challenging for the participants and moderator to track the example. (Communications) | <i>industry applications (medtech and concrete for example). It's daunting to find all the relevant patent is one's own field, much less in all fields.</i> |
| How to search the patent database? | <i>Is it updateable? New patents come out all time.</i> |
| <i>Is the patent database already mapped by scope concepts, or does every company have to work with their attorney to map them?</i> (Building controls) | <i>The problem is that only the inventors or very technical legal people will really understand the meat of the patent (to map scope concepts well).</i> |
| | <i>I would say it is not something just to pass off to an inventor. It is needs an attorney to be involved.</i> |
| | <i>Does it have the fluidity when you come down to a few problem patents, and you need to find another way that you don't have to redo the whole mapping? Will the workaround already be in a scope concept? Or have been discovered as a relevant scope concept? To have brought to the surface things which only become relevant due to the initial analysis?</i> |

b. Does this make sense?

| Product Manager | Technical Inventors |
|--|---|
| Participants nodding observed. | <i>This looks very familiar to me. What worked well about it is that it is very systematic, leaving no stone unturned. The downside is that it is very much a self-assessment, how the people in the process see it. If you miss a patent or misinterpret a claim (or scope concept) you still have a problem. (Moderator: Perhaps some doubt about lay people making patent legal decisions on whether a scope concept is in the product to be cleared.)</i> |
| | <i>Other participant, but it looks better than that to me.</i> |
| <i>This can be used by engineers.</i> (Building controls) | <i>It gives me a sense of direction. Now I won't have to sift through all those patents. If there is a question I can click and read the claim.</i> |
| <i>Just like Google is cataloging the internet, engineers are cataloging patents</i> (Building products) | <i>It's laid out nicely. I like how it shows the timeline of claim development, from broader earlier patents to more narrow ones later. It helps me see how the patent landscape has evolved.</i> |
| <i>I like it</i> (after just seeing the claim map). (Communications) | <i>It is very thorough.</i> |
| | <i>It is a lot easier to see the technical concepts in this chart than in the traditional method.</i> |
| | <i>I was surprised that the key word chart has a similar progression over time to the scope concepts.</i> |

| Product Manager | Technical Inventors |
|------------------------|---|
| | A participant flipped discussion to use of map in prosecuting patents and specifically anticipating prior art objections of examiner. This would allow changing the application claims, filing CIPs and being better prepared to respond to objections from the examiner. |
| | In some large companies they don't want to be showing prior art to their inventors because infringement then becomes willful. I'm wondering if by using this map we are putting concepts in front of the inventor and not claim text. I've worked on teams where I was to be "kept clean" and not contaminated by others patents. <i>But this means some of the best inventors can't help design workarounds.</i> |

Next you are going to see a video demonstration of the interactive capabilities of the scope concept matrix and then you'll have an opportunity to talk about it.
(Interactive and Dynamic Feature Overview Video—Antenna example, 18 minutes)

9. How does it sound now that you have seen the interactivity?

| Product Manager | Technical Inventors |
|---|--|
| <i>I think it has potential. My concern would be around missing or incorrectly mapping a scope concept. If the patent attorney does a good job it's a great tool. (Building products)</i> | Video not shown to inventors due to time constraints |
| <i>Could an engineer do the scope concept mapping early in the process? Would that cloud the results? I wouldn't want to spend attorney time very early in the process. (MedTech)</i> | |
| <i>If you work in the same technical space you'll build up a reusable database</i> | |
| <i>It's a disruptive innovation. (MedTech)</i> | |

10. Counsel and inventors can use this visual, interactive and update-able matrix to make decisions in a team meeting without the need to read pages of many patents.
(Visual Aid—Sample Claim Chart for Antennas on Table).

a) How does this new matrix sound to you and why? How would you describe it to a co-worker?

| Product Manager | Technical Inventors |
|---|--|
| <i>A patent portfolio landscape is the way I view it. (MedTech)</i> | Moderator showed a ClaimScope map for two related mechanical hip implant patents which boiled the patents down to eight scope concepts. The map is for soliciting licensees. |
| <i>It aggregates all the relevant patents and shows me the pathway to avoid infringement. The green lights show me where to go. If I avoid the few red scope concepts the entire portfolio of related patents goes away. To me it provides good clarity on what you need to do to</i> | <i>I can see how a first round would help refine the search and scope concepts and then expand the search to cover potential workarounds.</i> |

| Product Manager | Technical Inventors |
|---|---|
| <i>avoid infringement. (Building products)</i> | |
| <i>It's a visual tool. I would call it a strategic approach. It tells me in one fell swoop that if I avoid specific features I've got a green light. It tells me early if I'm headed down the right path. (Display)</i> | <i>I see the map as a way of making business decisions and setting strategy. It shows what's going on so you can plan offense and defensive actions. It is less of a tool for inventors to find solutions to challenges.</i> |
| <i>The word "tool" came to my mind. (Industrial)</i> | <i>Ask your client if this is a tool for guiding innovation; a replacement for traditional FTO analysis; or a way to get good claims on a new patent.</i> |
| <i>It's a patent landscaping tool or a mapping tool. It's a working tool for me. I wouldn't use it for communication with management, too detailed. (Building products)</i> | <i>My take on it is that it's a discussion tool for the designer and the attorney. For the attorney it is their PowerPoint® of their analysis for their client. It tells what your invention means in terms of a patent analysis.</i> |
| Moderator shared a one-page map of two 20 page hip-implant patents. | <i>You could use the map to look at a competitor's FTO. What are their "red flags"? What if the competitor is still using traditional FTO methods?</i> |
| <i>I can quickly screen patents and move on. (Communications)</i> | <i>You have to decide is this a telescope or a microscope? How could it tie to patent landscaping tools by others?</i> |
| <i>I can use it as the product design develops. (Displays)</i> | <i>You could use the map to weigh the cost of removing a "red flag."</i> |
| <i>It's a way to visually communicate where you stand. It's a great visual communication tool. (Communications)</i> | |

Precast concrete patents, an example of a division—How to tell them apart? Moderator shows exhibit.

- b) What obstacles to adopting this new method do you foresee? How would you get skeptics or risk-adverse people to try it?

| Product Manager | Technical Inventors |
|--|---|
| <i>We use two patent law firms, one for most of our work. If we have to change patent attorneys to adopt this tool it would be a big obstacle. We have a very good working relationship now with our attorneys. Setting up the billing structure and all that behind-the-scenes costs of changing is a problem and would lead to lots of resistance in our organization to switching patent attorneys just to use this tool. (Building products)</i> | <i>It would be nice to have broader scope and more patents in the portfolio mapped to be ready for workarounds. If you have to do it again after any tweak to the design it has cost and schedule implications.</i> |
| <i>Is there another route to gain access to this product? It depends upon who you are marketing the tool too, me or the attorney. The attorney is in the chain to me. I would ask my attorney to use this product. I like this tool and it should reduce costs. (Building products, continued).</i> | |
| <i>If our patent lawyers were given a map prepared by others they would have questions on its credibility. (Building products)</i> | |

c) Any other feedback on the new system of doing FTO analysis?

| Product Manager | Technical Inventors |
|--|----------------------------|
| <i>Does it reduce the legal costs? (Building products)</i> | |
| <i>Have you used it with customers yet? What if the design changes, do you have to go back and redo the scope concepts? How does the software work from the attorney perspective? (Communications)</i> | |
| <i>Do you have to re-do the analysis when the design concept changes? (Building products)</i> | |
| <i>If you have to add a scope concept, does the attorney have to go back and look at the claims in the portfolio? Additional patents? (Communications)</i> | |
| <i>What did you say takes three minutes? How can looking at a patent take three minutes? (Building products)</i> | |
| <i>How often to you go back and forth with the lawyers and how does this change the fee structure? Has any work been done to document the accuracy compared to traditional methods? (Communications)</i> | |
| Moderator observation: May be some confusion on whether the software or attorney is doing the mapping. | |
| <i>What is the source of the patent information feeding the system? (Displays)</i> | |
| <i>How will I be able to buy this tool? Direct for my desktop or only through attorneys? Corporate license? (Displays)</i> | |

Now we are going to move on to other applications of scope concept matrixes to the patents of others.

Portfolio Enhancement: Evaluating Your Patents & Applications

Moderator: We seek your views on the challenges of analyzing your own company's patents. We want to learn the challenges of looking at your business' patent portfolio to find gaps that may give competitors freedom-to-operate and in finding valuable innovations disclosed in patent applications but not yet claimed as property. Or your company may want to reduce its patent maintenance fees by selling or abandoning some patents that no longer apply to the current version of the product or are not valued by customers.

Traditional prior art and novelty searches usually end up focusing on two or three close patents or claims for the primary claim of a proposed in-house patent. It's useful in finding prior art for primary claims in one's patent applications. But it may not cover dependent claims or secondary independent claims at all. And logically you can't do keyword searches to find claim "white space" in your technical area.

Mapping Claim Density & Open Opportunities

This ClaimScope chart is based on methodology similar to the FTO matrix we just discussed. It is now filled with scope concepts and links to claims of 50+ related patents. All primary and secondary claims and/or product features described in the client's patent specifications had scope concepts abstracted from them as were the related patents of others. The findings

presented by scope concept rows and patent (or literature citations) in columns. This analysis shows what scope concepts are not claimed yet or are not claimed in combination.

The client's pending patents are shown to have significant scope concepts in "white spaces" where few or no claims are pending or issued. This indicates that the patent office will likely issue the client's claims as drafted and not require limitations be added so they don't tread on claims of issued patents. This finding significantly increased the acquisition price of the company because the other party's due diligence team agreed with the evaluation of the breadth of future patents.

Participants gathered around a very large map on a board, an example of mapping a specification of a client's patent applications to scope concepts and mapping relevant issued claims with those scope concepts to determine the likelihood of the most novel and powerful claims issuing.

11. Any comments on portfolio enhancement with scope concept matrixes?

| Product Manager | Technical Inventors |
|--|---|
| <i>It's a visual tool that allows people from different functions to work together. (Building product)</i> | A couple of participants expressed opinions on what the chart showed before it was explained. Moderator: "15 minutes of training and you're already reading a new claim map." |
| <i>The low-hanging fruit in selling this system would be in-house attorneys and patent agents. (Displays)</i> | Moderator shared example of two precast concrete footing patents that are 99.9% identical. It's useful in managing prosecution of multiple claims in a tight technical space so you can avoid wasteful duplication and see gaps in your "picket fence." |
| <i>It's all there but does it tell you which is the next Google? (Communications)</i> | <i>This type of map is familiar. We wanted to plan continuations and this map was very helpful.</i> |
| <i>It's a great way to show patent information and focus on what's important. It's much better than reading a pile of documents. (Building products)</i> | <i>Our most innovative feature didn't have much claim competition because it was really new. But to implement the innovation we had to use many established technologies where the patents are thick. That's where this map would be most useful. In these ancillary areas there are more redesign and substitute methods to choose from and they don't impact the product's competitive value as much. Knowing this early in the design process lowers costs and speeds things up.</i> |
| | <i>One problem is uncovering whether a competitor's claims are in practice in their products.</i> |
| | <i>One idea is to show us which claims are in products, which have value. Show us which claims are owned by competitors. Show us which ones have been successfully defended in court.</i> |
| | <i>The value of this tool is helping you focus on the areas where you really should invest some money to avoid infringement, instead of smearing money around the whole pile of patents. It helps you focus</i> |

| Product Manager | Technical Inventors |
|-----------------|---|
| | <i>your resources (design & legal resources).</i> |
| | <i>Show us the quality of the claims/patents that have not yet been cleared. Show us different degrees of red. Which patents have already been licensed by many competitors? Which ones are from companies that do not ever assert their patents?</i> |
| | <i>It's a cross-functional discussion tool.</i> |
| | <i>Add the number of times a patent is cited as a measure of importance.</i> |
| | <i>We look at the size and influence of a company's portfolio before worrying too much about their patents.</i> |
| | <i>Cross-referencing the map with your own or a competitor's business strategy would be useful. Tell me if a claim applies to a product. Why is it not in a product?</i> |
| | <i>We could use it to create blocking patents to slow our competitors.</i> |
| | Licensing patents big bucks as is asserting of them in court. |
| | <i>Paying for patents that don't protect a competitive advantage is a waste. This map shows those patents and provides a clear rationale for the decision. Now no one wants to stick their neck out and abandon or sell a patent fearing it later would be found important.</i> |
| | Big companies have trouble keeping track if a patent claim is used in a product. Could this mapping by scope concept make the connection? |
| | <i>Companies could use it to trim maintenance costs or accelerate licensing.</i> |
| | Discussion of IBM's patent portfolio and how they do so much licensing because smaller companies don't feel they have a choice. What if the IBM portfolio was mapped by scope concepts? |
| | <i>I'd use the maps to identify licensing prospects and zoom in on the best.</i> |

12. Are you involved in looking at your company's patent portfolio?

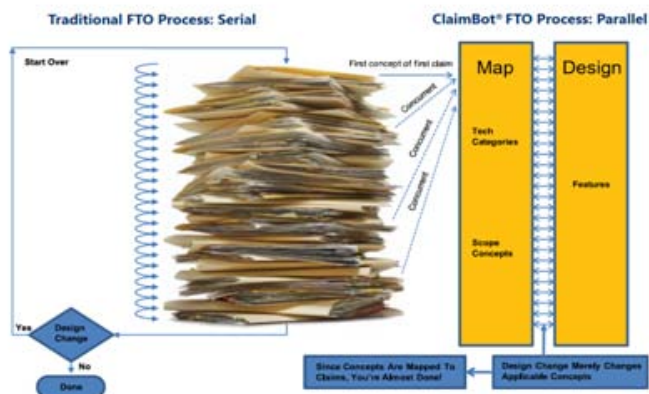
| Product Manager | Technical Inventors |
|--|---|
| <i>I have no occasion to look at it. (Display)</i> | Anticipated by a participant in prior segment. See first segment. |
| <i>I'm only interested in patents related to my product. That's the level of my portfolio analysis. (Communications)</i> | |
| <i>I look at our portfolio only from the perspective of new product concepts. (Building products)</i> | |

This is your last chance, any other feedback or comments?

| Product Manager | Technical Inventors |
|--|------------------------|
| <i>I think the Graphic User Interface will be important. I work with people whose eyes would automatically gloss over. It is exciting for nerds like us to see patterns in the technology and claims. I've seen too many massive internally- developed spreadsheets that are unintelligible. I have to assume attorneys are not using Excel very often. A professional and attractive user interface is important. (Display)</i> | No additional comments |
| <i>It goes back to the dashboard concept. We've developed a new product and the way it looks implies a certain level of quality. People will pay more for good design over a cheaper product with the same functionality. (Building products)</i> | |

Appendix A Illustrations and Exhibits

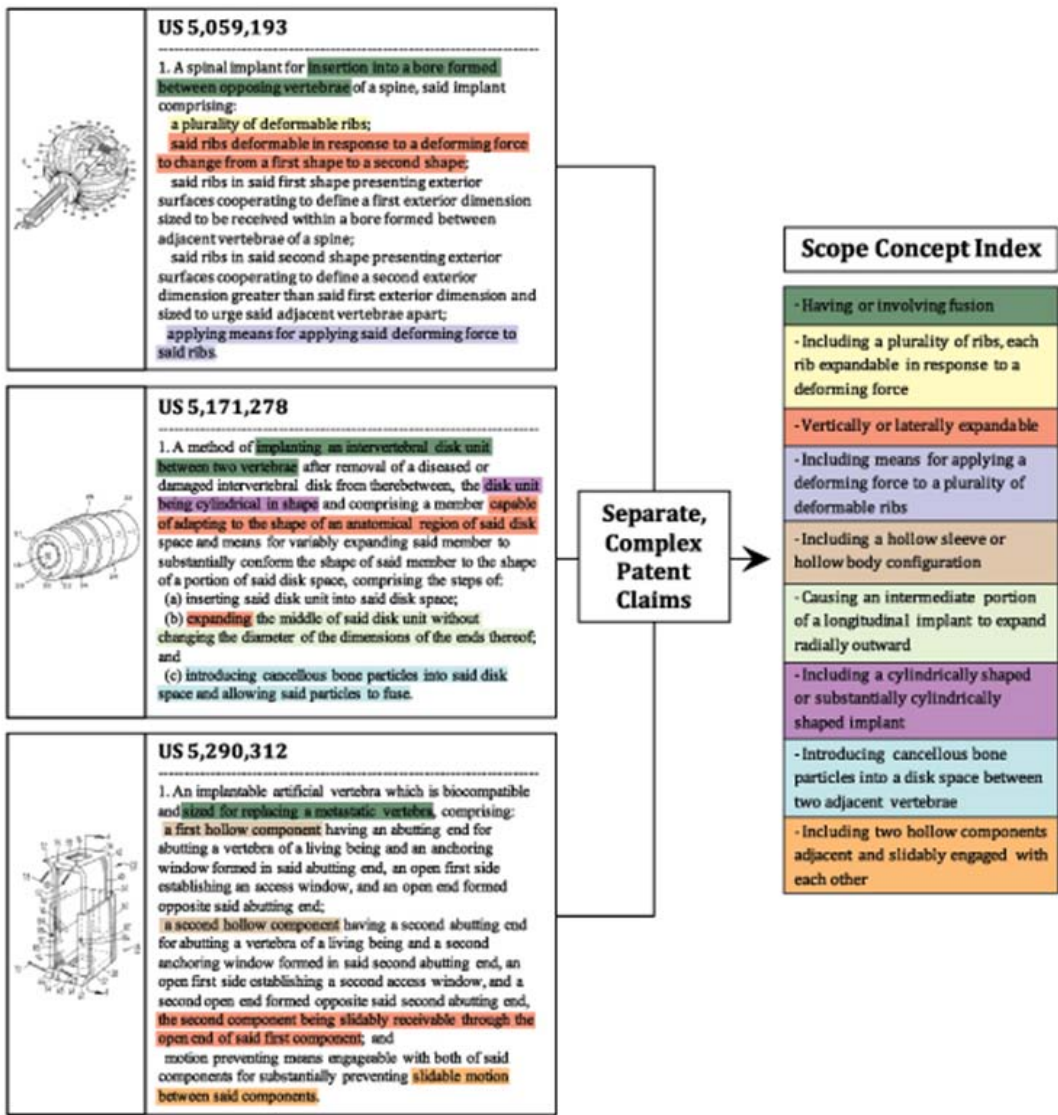
Traditional and New



Patent Work Products: Who Cares and Why?

| Typical IP Workflows | Portfolio valuation | Product clearance (freedom to operate) | Product/market protection | Claims assertion for licensing/litigation | Design-around | Search for patents that are interesting to license in | Search for targeted licensing opportunities where the licensee does not have product yet | Compare Portfolio coverage / Landscape | Use patent claim coverage for disclosure triage | Use art mapping analysis into R&D project selection. | Patentability search | Patent invalidation | White space analysis | Disclosure/specification analysis | New filings based on analyzed art extension |
|--|---------------------|--|---------------------------|---|---------------|---|--|--|---|--|----------------------|---------------------|----------------------|-----------------------------------|---|
| Typical stakeholders / functions in a Technology Company | | | | | | | | | | | | | | | |
| Patent Attorney | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 3 |
| Science/Technologist | 1 | 3 | 2 | 2 | 3 | 2 | 1 | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 3 |
| Engineer | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 |
| Product Manager | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 1 | 1 | 1 | 2 | 3 | 1 | 1 |
| Business Line Manager | 3 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 1 |
| Finance and Accounting Group | 3 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 |
| Licensing/Business Development | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 1 | 1 | 1 | 3 | 2 | 1 | 1 |
| Investor Relations Group | 3 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 1 |
| Strategy/Research Team | 3 | 3 | 3 | 3 | 1 | 2 | 1 | 3 | 1 | 1 | 1 | 2 | 3 | 1 | 1 |
| Top Level Executives | 3 | 2 | 2 | 2 | 1 | 2 | 2 | 3 | 1 | 1 | 1 | 2 | 3 | 1 | 1 |

Mapping Patent Claims to Scope Concepts Illustration



Language and structure clarified and cross-referenced by attorney in using an automated dashboard user-interface.

Exhibit: ClaimScope™ Licensing Chart

For a 20 page, 37 claim patent

| | | | |
|---|------------------------------|----------------------|------|
| Title Femur fixture and set of femur fixtures | | | |
| File# | | | |
| Patent# 7,156,879 | | | |
| Assignee Name | Claims Per Relevance: | | |
| Filing Date | High | 37 | |
| Total Claims | Medium | 0 | |
| Claim# (Both) | Low | 0 | |
| Claim Status (1=don't need, 2=want, 3=possibly need) | | | |
| SC Relevance to Target (3=High, 2=Medium, 1=Low) | | | |
| Scope Concept (Alphabetical, Asc.) | Relevance | Claims Mapped | |
| 0010 intraosseous anchoring structure | 3 | 37 | 100% |
| 0011 anchoring structure of a generally circular cross-section for screwing laterally into a complementary bore drilled laterally into the neck of a femur | 3 | 37 | 100% |
| 0012 bore drilled laterally into the neck of a femur after resection of the femur head to an anchored position | 3 | 37 | 100% |
| 0014 intraosseous anchoring structure formed from a single, one-piece member and having a proximal end, a distal end, a frusto-conical proximal section at the proximal end, and a proximal cylindrical section having a screw thread profile thereon and extending towards the distal end from the frusto-conical proximal section | 3 | 37 | 100% |
| 0016 screw thread profile extending from frusto-conical proximal section towards the distal end, frusto-conical proximal section being shorter than said proximal cylindrical section, the frusto-conical proximal section and the proximal cylindrical section each being dimensioned so as to bear against the cortex of the femur neck when the intraosseous anchoring structure is in the anchored position | 3 | 37 | 100% |
| 0018 a collar section having a distal surface abutting and extending outwardly from a frusto-conical proximal section | 3 | 37 | 100% |
| 0019 collar section extending generally radially outwardly from the intraosseous anchoring structure, wherein the intraosseous anchoring structure further has a distal cylindrical section having a screw thread profile thereon and extending towards the proximal cylindrical section from the distal end of the intraosseous anchoring structure, the diameter of said distal cylindrical section being less than the diameter of said proximal cylindrical section | 3 | 37 | 100% |
| 0020 intraosseous anchoring structure dimensioned so that its distal end projects through the lateral cortex of the femur when the intraosseous anchoring structure is in the anchored position | 3 | 1 | 3% |

| Scope Concept (Alphabetical, Asc.) | Relevance | Claims Mapped | |
|---|-----------|---------------|-----|
| 0040 intraosseous anchoring structure comprising a tapered connecting section provided between and interconnecting proximal and distal cylindrical sections | 3 | 8 | 22% |
| 0050 connecting section has a frusto-conical shape which at one end has a proximal diameter essentially equal to the diameter of said proximal cylindrical section, and at the other end has a distal diameter essentially equal to the diameter of said distal cylindrical section | 3 | 1 | 3% |
| 0060 connecting section has a flank angle in the range of 15.degree. 45.degree. | 3 | 1 | 3% |
| 0070 connecting section is at least partly provided with a blasted surface | 3 | 1 | 3% |
| 0080 connecting section is at least partly provided with a circumferentially oriented roughness | 3 | 3 | 9% |
| 0090 circumferentially oriented roughness has a height less than that of the screw thread profiles of said proximal and distal cylindrical sections | 3 | 1 | 3% |
| 0100 height of circumferentially oriented roughness is no greater than 0.3 mm | 3 | 1 | 3% |
| 0110 connecting section is at least partly provided with a smooth surface | 3 | 1 | 3% |
| 0120 the entire surface of said connecting section is smooth | 3 | 1 | 3% |
| 0130 one or more self-tapping cutting recesses are provided at least in part on said connecting section | 3 | 1 | 3% |
| 0140 frusto-conical proximal section at an end thereof interfacing proximal cylindrical section presents a diameter essentially equal to the diameter of said proximal cylindrical section | 3 | 1 | 3% |
| 0150 frusto-conical proximal section has a flank angle in the range of 8 15.degree. | 3 | 1 | 3% |
| 0160 frusto-conical proximal section has an axial extent in the range of 5 10 mm | 3 | 1 | 3% |
| 0170 frusto-conical proximal section has a proximal diameter in the range of 18 30 mm | 3 | 1 | 3% |
| 0180 frusto-conical proximal section is at least partly provided with a roughened surface | 3 | 3 | 9% |
| 0190 roughened surface is at least partly a blasted surface | 3 | 1 | 3% |
| 0200 roughened surface is at least partly provided with a circumferentially oriented roughness | 3 | 3 | 9% |
| 0210 circumferentially oriented roughness is in the shape of a screw thread profile | 3 | 3 | 9% |
| 0220 screw thread profile of said frusto-conical proximal section differs from the screw thread profile of proximal cylindrical section | 3 | 2 | 6% |

| Scope Concept (Alphabetical, Asc.) | Relevance | Claims Mapped | |
|--|-----------|---------------|-----|
| 0240 height of the screw thread profile on the frusto-conical proximal section is no greater than 0.3 mm | 3 | 1 | 3% |
| 0250 screw thread profile on the frusto-conical proximal section is formed by the turns of one or more screw threads | 3 | 1 | 3% |
| 0260 circumferentially oriented roughness is in the form of circumferential beads | 3 | 3 | 9% |
| 0270 circumferential beads has a height less than that of the screw thread profile of said proximal cylindrical section | 3 | 1 | 3% |
| 0280 height of said circumferential beads is no greater than 0.3 mm | 3 | 1 | 3% |
| 0290 head section for supporting a ball component of the hip-joint prosthesis, head section comprising collar section | 3 | 4 | 11% |
| 0300 distal surface of collar section is inclined inwardly towards a body of the collar section | 3 | 2 | 6% |
| 0310 distal surface of collar section is inclined inwardly at an inclination angle within the range of 10.degree. 20 | 3 | 1 | 3% |
| 0320 distal surface of said collar section is concave | 3 | 1 | 3% |
| 0330 distal surface of said collar section is provided with radially spaced circular beads | 3 | 2 | 6% |
| 0340 circular beads have a height in the range of 0.1 0.5 mm | 3 | 1 | 3% |
| 0350 frusto-conical proximal section and the proximal cylindrical section of each fixture in the set have different dimensions, whereby the fixture in the set having the frusto-conical proximal section and the proximal cylindrical section of correct size for abutting the cortex of the femur neck of a particular patient can be selected for use in that patient | 3 | 1 | 3% |
| 0360 distal cylindrical sections of all fixtures in the set have the same dimension, and the frusto-conical proximal section and the proximal cylindrical section of each fixture in the set have different dimensions, whereby the fixture in the set having the frusto-conical proximal section and the proximal cylindrical section of correct size for abutting the cortex of the femur neck of a particular patient can be selected for use in that patient | 3 | 1 | 3% |
| 0370 a tapered mounting section, said tapered mounting section extending from a proximal end of said collar section to a proximal end of the femur fixture | 3 | 1 | 3% |

This document is a summary and mental aid for organizing the subject matter of various claimed inventions. As such, the language used herein paraphrases, alters, and re-arranges the language of the claims as a matter of convenience and clarity. Therefore, this language should not be used to interpret the legal scope and limitations of the inventions described herein.

Appendix B Note from the Researcher



Dear Patent Professional,

We appreciate your interest in the research study we conducted, "*Views of Technical Inventors & Product Managers on Freedom-To-Operate & Portfolio Enhancement Work Products of Patent Law Firms.*" We had amazingly talented and accomplished people participate in the focus groups and I thank them for their candid feedback.

I wish to thank the Schwegman, Lundberg, & Woessner, PA firm for the opportunity and their collaboration on the study.

I had to quickly learn about freedom-to-operate studies and a software-driven work process with dynamic and visual outputs. Special thanks to my tutors, Lars O.H. Svensson, one of the architects of the software, and Steve Lundberg, Bill White, and Edward Sandor who patiently explained patent claims analysis and to all who helped prepare the exhibits and case studies. FieldWorks® did a great job on-site with participants, technology and food.

I spend a lot of time with inventors and it was a bit surprising to find a law firm full of inventors and inventions. To improve the quality and cost-effectiveness of their work the firm invented and invested in the *ClaimScope™* patent-charting method which merits being called a disruptive innovation.

ClaimScope overturns a century of traditional professional practice for a new method that could only be done with today's software and computing power. But for all the investment in software, it's still the attorney's legal judgments and technical knowhow that conceptualize the analysis needed and properly interpret obtuse claims.

Best wishes in navigating your way through the massive thicket of patent claims. May you avoid infringement and get valuable claims issued for your patents

Cheers!

A handwritten signature in blue ink, appearing to read "Clyde Hanson", written over a light blue horizontal line.

Mr. Clyde Hanson, Managing Director

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Appendix C About the Sponsor



Intellectual Property Lawyers & Patent Attorneys

Schwegman, Lundberg & Woessner, P.A. (SLW) believes that all new ideas and innovation – from nano to mega – deserve the best protection and assistance. Our patent attorneys and intellectual property lawyers are in the business of protecting your ideas. We welcome the opportunity to earn your trust and to advance your business.

Our Mission

It is the mission of SLW to be the highest quality provider of intellectual property (IP) services. To further our mission of providing cost-effective, high-quality protection for our clients' IP, the firm concentrates on patent drafting, prosecution, related client counseling and opinion work, and supports litigation through opinion work, IP audits, consulting and expert witness services.

What We Do

SLW is a boutique law firm dedicated to the practice of intellectual property law. This means everyone at SLW is on the same page and there is no competition between departments for staffing, technology, and other issues that deter attorneys from focusing on their clients' needs. In other words, we play well with each other.

SLW specializes in strategic patent portfolio planning and management, infringement, validity and clearance investigations, opinions and all phases of intellectual property prosecution practice. This includes preparation and prosecution of patent applications, appeals, re-examinations, interferences and foreign oppositions. SLW cooperates with and advises clients' litigation firms regarding their intellectual property litigation. In this fashion, SLW is able to provide its clients with a realistic appraisal of litigation risks and can better fulfill its mission of providing the highest quality corporate IP services available.

Firm Profile

Schwegman Lundberg & Woessner is a law firm focused on creating value for our clients by applying our expertise in intellectual property law to obtain, evaluate, and develop patents. We are privileged to serve an international roster of clients that includes: multinational corporations, middle-market businesses, startups, universities, and individuals. Our clients benefit from the high-quality, value-added strategic counseling and client service that are our hallmark.

Patent Prosecution • Claim Mapping • Opinion / Consulting Work



INNOVATORS IN THE PRACTICE OF PATENT LAW

Quality and Productivity: Innovative processes enable us to spend more time using information and less time finding and manipulating it

Schwegman Lundberg & Woessner has developed the ClaimScope™ software program and analytical process to chart and index patent claims, and ClaimTracker™ software to manage prosecution history. Together these programs capture and organize all information critical to prosecuting and managing patents and their claims.

This critical information is fully cross-referenced and stored in a word-searchable relational database allowing for instantaneous retrieval and cross-correlation of all prosecution data, including prior art. The ClaimTracker software saves attorney time (as much as 25%) that might otherwise be used in gathering the information required for prosecution. This allows spending more time applying knowledge, and less on assembling information, providing a better product in the same amount of time.

We are the only firm that captures and retains 100% of prosecution history information in this way. Our attorneys and clients can use our databases to obtain a graphic overview of the history of claims, interactively surf file histories, or study the citation history of prior art. Additional summary and detailed reports are available at the click of a button.

For more information about ClaimScope see:

http://www.slwip.com/services/documents/SLW_ChemFTO_2011.pdf