

The third in a series of articles concerning invention conception and patent filing/prosecution strategy for small to large organizations from an inventor, engineer and product developer's perspective.

In the second article I talked about opportunity mapping as the seedbed for future products or services. The goal is to have a map of benefit delivery targets to grow with, each delivering increasing benefit/coverage to the market. However, creating customer value takes more than just concepts. Bringing concepts to a workable solution state takes problem solving skills.

Coming up with great ideas, *that are new to you*, is not that hard. It mostly takes focused problem definition and knowledgeable people who are not afraid to loosen up and reach beyond the present solutions and their naturally developed personal biases.

Invention Workshops are a valuable tool to help guide subject matter experts through a creative thought process to generate problem solving benefit rich delivery solutions.

The elements of a successful *Invention Workshop* are:

1. Focused problem definition
2. The right mix of expert participants willing to collaborate
3. An environment to free participants to focus and create

Framing the Opportunity

As discussed in Opportunity Mapping, we gain perspective by envisioning an Ideal Solution of all benefits and no negatives. We set this as our north star as a standard to work towards and for comparison of solution concepts. Similarly we use opportunity statements that provide clarity of mission by carrying the clients strategic vision and providing a context for the opportunity to be addressed.

This originates with the sponsor and/or content client and is refined by the participant team. As example for a cooking appliance;

Background: Users desire perfect results but don't always know how. Misuse of the appliance results in poor results and dissatisfaction. What if the appliance could assist you in the process steps so that your creations come to fruition?

Opportunity Statement: Create sensing technology control schemes for cooking processes to provide options for assisted cooking. Helping the user prepare simple to complex recipes providing for breakthrough user experience and satisfaction.

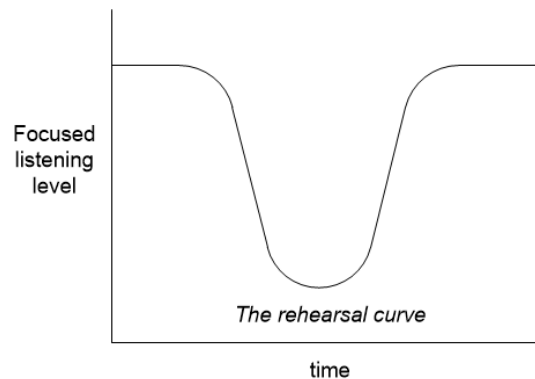
Group Thinking

Getting teams to expand their thinking can be accomplished by employing Nominal group technique (NGT). NGT is often used as a way to reach consensus within groups. It can also be

facilitated to allow for multiple contributors' thoughts to both converge and diverge resulting in the constructive challenging of and/or the additive building of ideas.

Brainstorming can be fun and useful to generate a compilation of thoughts/ideas/concepts from a selected group of participants. As with any *groupthink*, the more diverse the group, the more diverse the thoughts. However, we look to balance subject matter and adjacent expertise of the group with the ability to listen. If a person cannot seem to listen to others then they might not be right for a group collaboration.

In and Out listening: In the 1950's studies were conducted to understand how people think interactively with others in group settings. The adjacent inverted bell curve is a measure of mental engagement with those speaking. People listen attentively gaining information and then they drop out of active listening to engage a thought and formulate a response. This dropping out and re-emergence to the conversation which at first glance looks choppy but when dealing with a group the participants' curves overlap and the result is a flow of thought that contributes/challenges and builds on the thoughts of others.



We have used NGT with large and small groups to explore future scenarios, compile market profiles... by opening up a group's thinking, unleashing tacit knowledge and thus allowing the group to build a new level of knowledge and dive deeper into exploring an issue or opportunity from multiple perspectives.

We have participants frame their thoughts with "*I wish*" in broad headline-like statements which provides the other participants with a clear vision of the thought and it also helps unburden them to open up to broader possibilities by not worrying about constraints.

When the pushback comes, "constraints are reality", we use "*How to*" to shelter the idea by reposing it as a question and offering a challenge to the group to contemplate.

Constraints can be physical laws but perspective plays a role in how the laws apply.

Buoyancy as example: we might not have concrete balloons but we do have concrete boats.



Constraints often come about based on our organizational and personal subconscious biases. How we have done things or have been told how they are done.

To cope with the vast amount of sensory information coming at us all the time, we:

- *delete*
- *generalize*
- *magnify*

information to make a **filtered model** of our world.

Our **filters** include our

- *Habits/Beliefs*
- *History/Tradition*
- *Policies/Procedures*
- *Rules/Guidelines*
- *Education/Past experiences*
- *Culture, etc*

Basically, everything that guides us

There are many methods of dealing with mental inertia. Simply revisiting how we frame the opportunity can help reduce biases. Another avenue that has been rigorously developed and practiced are TRIZ methods, which will be explored and incorporated into the Invention Workshop process in the next article.

For now we wish to give the basic flow of the Invention Workshop process.

I typically demonstrate this on a flip chart which is our tool of choice to capture ideas, encourage sketching, and manage engagement of the group through controlling the flow of ideas. Here I will list out the phases and provide the graphic.

Pre-Work shop

It starts with a meeting exploring the clients' and sponsors' desires and needs and scoping for a workshop.

- The sponsor usually is the organization's functional leader and gate keeper
- The client is technically involved and carries the vision through the workshop

Next is first draft of an opportunity statement and selection of workshop expert participants

- The Opportunity statement articulates the vision of where solutions are sought to deliver singular or multiple benefits
- Logistics of when and where to hold workshop and securing participants priority

Getting Focused

Kicking off the workshop; reviewing vision for reasons where/why we seek delivery of benefits

- This can involve a much broader participant base such as marketing and strategic planning functions to help articulate the opportunity vision

- Participants edit the opportunity statement to establish understanding

Generating a Breadth of Ideas

Ideation of concepts (via “I wish” and “How to”)

- Some will be used as springboards to dive into an area deeper

Selection of Springboards for later exploration by the group

- Typically by the client and often participants

Go for Depth

Driving depth for a specific springboard or thought train of several like ideas. This can include;

- Soliciting ways and means to get to a solution
- listing out pros and cons of an idea and addressing each
- Exploring TRIZ standard solutions, scientific effects or framing of a contradiction

Harvest

Harvest inventions by simple vote and assignment of write up

- this temporarily shifts from group back to individual contributor
- First draft is prepared for group edit

Review

Review with Legal client to ensure clarity and provide initial feedback

- Typically in house counsel or retained counsel
- Decide on what and how to proceed on search and application

Follow-up on outcome and disclosures including:

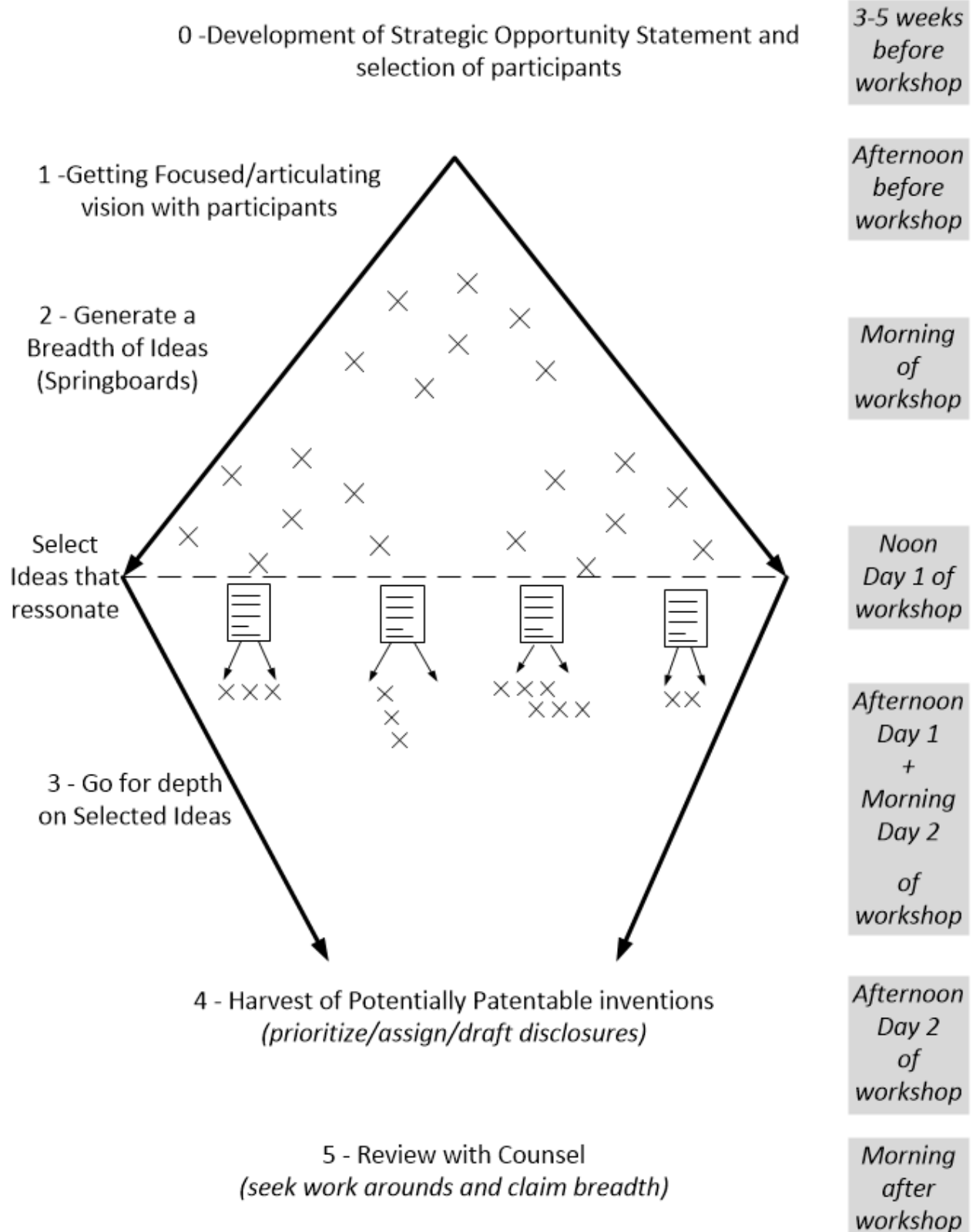
- help with write up
- initial search
- further TRIZ design around and trimming
- Mapping to IP landscape

The following graphic illustrates the sequential flow and areas of expansion and focusing down of thought to get to solution disclosures.

In the End

By providing a structured but encouraging workshop environment participants will have a focused time and place to explore and create unhindered. They will leave both exhausted and refreshed.

The Invention Workshop - Overview of the Approach



Invention Workshops; A Cross of Technology Push with Customer Pull

You know, if a need, then a solution, and an opportunity

We've gotten a little further and a little deeper and hopefully this will spur you to action, even if on a limited basis. Contact us to discuss your business needs and issues. Together we will work out a plan on how best to help you. I look forward to sharing my experiences in identifying opportunities and developing protectable solutions with you and your team!

The next post will be on; Using TRIZ Methods for Problem Focus, Ideation and Refinement

Sincerely,
[Steve Kuehl](#)