

Idea in a bottle – A new method for creativity in Open Innovation

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Abstract

This paper presents an approach to increase the creativity of ideas/solutions in an idea contest. Analog to a *letter in a bottle* tasks are distributed in a randomized way to potential problem solvers. The idea contest is a method from Open Innovation which opens a company's innovation process to its environment (e.g. customers, suppliers). By using idea contests the creative potential of a large crowd of people can be used for developing innovative solutions for a specific task. Nevertheless, based on experience from industry projects we found that creativity often is limited. This paper presents an approach for increasing the creative potential of participants. The new integrated method combines idea contest with lead user's methods and aspects from synectics and communication.

Introduction

Open Innovation integrates a company's environment into its innovation process, e.g. in terms of customers or suppliers, and enables new innovations (Chesbrough et al. 2006). A popular Open Innovation method is the, usually web-based, idea contest which allows companies to publish a specific issue/task to a large crowd of people. These develop and post potential solutions for the issue. The idea behind is using the diversity of the crowd to generate creative and innovative solutions (Keinz et al. 2012). By giving participants/users the possibility to review other posts they can evaluate them as well as advance them. However, in industry projects we found that submitted solutions often are relatively homogeneous, of small number and of low degree of creativity.

In order to improve participants' creativity and the quality of posts, we developed the approach "Idea in a Bottle" based on the creativity method Synectics and Shannon's model of communication. The idea is to break up entrenched processes within an idea contest where users/problem solvers choose tasks to contribute. This is done by allocating the four phases of synectics (see next chapter) to different persons or groups and instrumentalize the primarily negative "noise source" of Shannon's model

in a positive manner. We propose, by randomly allocating issues from idea-seekers to other users, their creativity is stimulated. The confrontation with an unexpected, non-self-chosen task helps overcoming our assumption that users usually choose issues they are familiar with. To direct the randomized process into efficient channels the Pyramiding method from the lead user concept is utilized. Thus, the first recipients of the issue do not solve it but act as agents and forward it to users they consider to be suitable and experienced on the specific field. These users submit suggested solutions to the idea seeker who evaluates the usefulness.

The proposed approach is applicable for issues/tasks of low and medium complexity. This means the improvement or new development of everyday products or the solution of medium complex problems. All issues should be processable without the need of highly specialized expertise or know-how.

The paper starts with a rough overview of the state of the art of Open Innovation, different user integration concepts, synectics, and Shannon's communication model. Based on this we present our I aB approach. We close the paper with a discussion about the planned evaluation of our approach by integrating I aB into a web-based idea contest platform.

State of the art

This chapter shortly explains the underlying concepts of the proposed approach "Idea in a Bottle". The basic elements are Open Innovation, synectics, Shannon's communication model, analysis-of-stimulating-word and pyramiding.

Open Innovation and Crowdsourcing

Open Innovation opens a company's innovation process to its environment (Chesbrough et al. 2006). The interaction with the environment enables innovations inside and outside the company. A concept focusing on the innovative potential of a large group of people is Crowdsourcing (Sloane 2011). The crowd can help elaborating and solving

specific issues and tasks by using the diversity of persons with their individual backgrounds, mindsets, abilities and knowledge (Keinz et al. 2012). A popular Crowdsourcing method is the usually web-based idea contest. Companies or individuals can publish issues on a web-platform. Users of the platform look at the issues and post ideas for solutions. Other users review these posts, advance them or get inspiration for new ideas. The goal is obtaining a large number of advanced ideas.

Lead User

According to von Hippel et al. (2006) lead users are characterized by (1) their capability for innovation as they are ahead of the market, and (2) their motivation for contribution. Several methods were developed to identify these innovative users. One method based on the snowball effect is the method Pyramiding. It is based on the assumption that people who are interested in a topic know other people who are more expert than themselves. Thus, Pyramiding starts with an initial group of people who name other people they consider to be more expert. These persons again name persons considered to be more expert. After some iterations potential lead users are gained (von Hippel et al. 2006).

Synectics

Synectic is a creativity technique based on brainstorming and was developed by W.J.J. Gordon in 1960 (Daenzer and Huber 2002). By postulating analogies from different fields, e.g. literature, nature, or symbols, users of this method are supported to find new solutions spaces for a stated problem. Synectic is a group technique with a proposed maximum of 10 participants who are instructed by a skilled moderator (Daenzer and Huber 2002). Synectics is structured into four phases which are passed through sequentially. The four phases are:

1. In the **Analysis** phase the group exposes the problem and states a problem definition. Also first solutions will be gathered and documented. Finally the problem should be restated.
2. The second phase, **Incubation**, is characterized by taking one step back with the help of building analogies. For example the group tries to build personal analogies by thinking how the object of interest feels. The outcomes of this phase are abstract solutions of the problem.
3. In the third step the stated analogies get analyzed and it is tried to transfer the solutions on the original problem. This can also be done with the help of force fit, i.e. oppressive reforming of the analogies. The results of the **Illumination** are new solutions approaches.
4. In the **Verification** phase the proposed approaches are used to elaborate solution concepts.

Presentation of Communication by Shannon

The communication process within an idea contest or synectics, e.g. the problem description formulated by the idea-seeker and interpreted by the problem solver, is one of the success factors for developing appropriate solutions. In 1963 Shannon and Weaver proposed a schematic diagram of a communication system (Shannon 1998). The proposed diagram consists of five essentially parts. These are information source, transmitter, channel, receiver, and the destination depict in Figure 1.

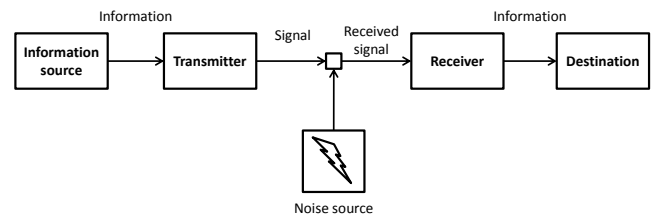


Figure 1: Schematic diagram of Communication by Shannon and Weaver (Shannon 1998)

The information source produces messages or sequences of messages which should be communicated. These messages can be of various kinds, e.g. letters or functions (Shannon 1998). The operator produces a suitable signal for transportation. The channel is the medium which transmits the signal to the receiver. The receiver reconstructs the signal and transports it to the destination, i.e. the person for whom the message is intended.

An important factor in Shannon and Weaver's diagram is the noise source introduced in the channel. This source leads to impacts on the communication. These impacts can change the original message by new interpretations, extension, reduction, or adaption (Lindemann 2009).

Analysis of stimulus words

This is a creativity method for developing new ideas by confronting participants with words not related to the actual topic. Participants analysis these words spontaneously by relevant criteria and build links to the original topic (Lindemann 2009).

A new method for creativity in idea contests: Idea in a bottle (I²aB)

In order to increase the creativity and quality of ideas developed during an idea contest, we suggest redesigning the present communication process on an idea contest platform. So far, in analogy to Figure 1, an idea-seeker describes his issue (information source) by a problem description/task (transmitter) and publishes it on the platform. Here other users (receivers) can select this task, read it and derive their understanding of the task (destination). The following posting of solution ideas proceeds in an analogous way.

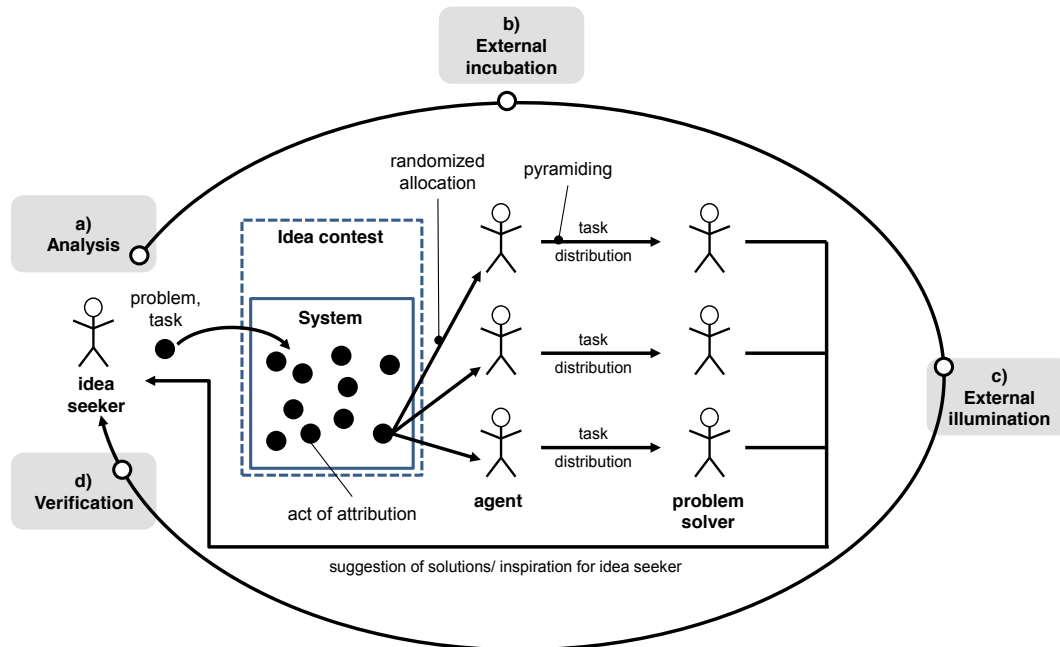


Figure 2: Model of Idea in a Bottle

Our approach splits up the four steps of synectics and distributes each to another group in order to increase efficiency and creativity. The analysis (1) is performed by the idea-seeker as “owner” of the problem. His analysis and statement of the issue affect the entire following I aB process. The incubation (2) is located by users of the platform who read and interpret the problem statement. Based on their understatement they link the issue to other users they consider suitable for the issue. The illumination (3) is conducted by the recommended users. They develop solution ideas for the given task based on their own interpretation of the issue and their personal background. The final verification (4) of the created solution ideas is performed by the idea-seeker himself again. Due to the incubation and illumination stage are not executed by the idea-seeker but by other users we term them “external”.

The I aB approach instrumentalizes the “noise source” in terms of a randomized distribution of tasks to users. Instead of selecting familiar issues users get new tasks. Receiving unfamiliar topics shall support out-of-the-box thinking by providing an external perspective on a topic. To prevent demotivating users by receiving to many unfamiliar topics the distribution and solving step are separated by an intermediary Pyramiding step. The primary receivers of a task forward it to other users they consider to contribute a value gain to solving the problem. The process of the idea-seeker putting his issue into the platform without knowing who is receiving the issue is comparable to a letter in a bottle thrown into the sea. Hence, the approach was named “Idea in a Bottle” in analogy.

Figure 2 illustrates the concept of Idea in a Bottle (I aB). It consists of four stages analog the synectics approach, as mentioned previously:

In Stage 1 “**analysis**” idea-seekers phrase their problem/issue in a written task statement. It can also be enhanced by a picture or sketch. However, it is the intension to gain a compact description of the issue which focuses on relevant aspects. This increases the comprehensibility and thereby the user’s motivation to deal with the issue. Thus, the number of words will be limited to abstracts’ length with ca. 250 words in the beginning. Adding characterizing keywords supports the later forwarding process by the so-called agents. All issues are stored on the web-based idea contest platform.

In Stage 2 “**external incubation**” the Idea in a Bottle (I aB) system distributes the issue in a randomized way to three registered users on the platform. These users act as agents: they examine and, due to its shortness, interpret the issue. They are allowed to reply a potential solution idea. However, primarily their function is forwarding the issue to another user they consider able to contribute an add value for solving the issue, e.g. due to their experience/behavior in other idea contests on the platform. This forwarding process is based on the pyramiding method of the lead user concept. The optimal number of agents and problem solvers needs to be evaluated in practical tests. The randomized distribution and interpretation of the issue by the agents equate the noise source of Shannon’s model. Summarized, the randomization stimulates the creativity of problem solvers in terms of analysis-of-stimulus-words (Lindemann 2009). By receiving forwarded issues, we as-

sume an increased motivation of problem solvers due to the honor of being recommended by other users.

Stage 3 is called “**external illumination**” due to the interpretation of the issue by other users. As described before, the potential problem solvers receive a random issue with the request for solving it. Since the problem solver does not know the real problem, only the problem statement, he builds new analogies of the given problem by interpreting the issue. These new analogies combined with the randomized distribution should lead to creative solutions which were not considered by the idea-seeker. Similar to Stage 1 also the solution ideas can consist of text, photos or sketches. The size is limited, too. The problem solver is considered to contribute with solution ideas. Otherwise it is also possible to submit advices/hints which might indirectly draw the idea-seekers attention toward alternative potential sources and directions for a solution. Both the solution ideas and the hints are submitted electronically via the I aB system.

In Stage 4, “**verification**”, the idea-seeker receives potential solution ideas and evaluates them regarding their applicability to his problem. In comparison to “classical” idea contest with a high effort in evaluating the gained ideas (Kain et al. 2012), we assume the verification effort for ideas created by I aB being lower since the solutions were elaborated by qualified system user. In the case of no appropriate idea the idea-seeker can submit his issue for a second loop.

Conclusion and next steps

The presented approach supports increasing the creativity and quality of solution ideas posted in an idea contest. This is realized by a combination of crowdsourcing, synectics, creativity techniques and pyramiding. Issues/tasks published by idea-seekers cannot be chosen by other users as in “classical” idea contests but are distributed in a randomized way to users who forward it to potential problem solvers. This randomized distribution combined with both the interpretation by the agent and the potential problem solver supports “out-of-the-box” ideas which might lead to innovative solutions. At this, the confrontation with unfamiliar topics acts as an analysis-by-stimulating-words and affects the problem solver’s creativity. Additionally by being considered as a kind of expert by other users the motivation should tend to be high to contribute a solution.

I aB is enhancing, transferring and implementing classical creativity methods for new media and distributed product development activities. However, synectics was developed in the 1960s and is a classical creativity method which can be used in teams. We try to adapt this method for today’s multi-media society.

To evaluate and proof these advantages we plan to implement I aB in a web-based way. The basis will be an idea contest platform at the institute which is being implemented at the moment and is specifically designed for testing

new methods in the field of Open Innovation. This platform allows Open Innovation contest with students as well as industry as evaluation partners.

Here, we have the possibility to assess I aB in direct comparison to a “classical” idea contest. At this, the user pool of the platform can be used, as a sufficient community is seen as crucial success factor.

Besides others, the following questions need to be addressed:

1. Does the satisfaction and motivation of problem solvers increase?
2. Are differences regarding the number of replies to an issue; the quality and usefulness of ideas; the creativeness and the evaluation effort by the idea-seeker?
3. Is the choice of limitations of the issue description useful?
4. Are there any specific patterns within the forwarding process with frequently involved users?

Summarized, the expected key contributions of I aB are (1) a higher creativity, (2) a higher motivation of problem solvers and (3) a higher resulting quality of solution ideas.

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