# Introducing Open Innovation to universities – How to increase universities' innovativeness

## Philipp Kipp

Kassel University, Pfannkuchstraße 1, 34121 Kassel, Germany
E-mail: philipp.kipp@uni-kassel.de

## Shkodran Zogaj

Kassel University, Pfannkuchstraße 1, 34121 Kassel, Germany
E-mail: zogaj@uni-kassel.de

## Philipp Ebel

Kassel University, Pfannkuchstraße 1, 34121 Kassel, Germany
E-mail: ph.ebel@uni-kassel.de

## Ulrich Bretschneider

Kassel University, Pfannkuchstraße 1, 34121 Kassel, Germany
E-mail: bretschneider@uni-kassel.de

## Jan Marco Leimeister

Kassel University, Pfannkuchstraße 1, 34121 Kassel, Germany
E-mail: leimeister@uni-kassel.de

**Abstract:** In order to react to increasing competition for new students, European universities need to become more attractive and listen to the demands of their students. Open Innovation has proven to be an effective way for the integration of new stakeholders into innovation processes and increase innovativeness. This paper describes the application of a framework for the design of Collective Intelligence task to an Open Innovation context. We will show how the framework supports the conceptual design of an idea generation process for a virtual ideas community platform for a German university. The process will account for the specific environment of public universities and the demands of their students. The paper shows that the framework for Collective Intelligence is also applicable to crowdsourced Open Innovation activities like idea generation.

**Keywords:** Collective Intelligence; Open Innovation; Virtual Ideas Communities; Universities; Collaboration; Web-based Platforms; Innovation; Crowdsourcing

## 1 Introduction

European Universities are currently facing increasing competition for students. The reasons for this development are reforms like the Bologna-Process. Another reason for increasing competition especially among German universities is that the central office for the allocation of places in higher education does no longer exist. Because of that universities have to recruit for students themselves. This is why universities have to face a more competitive situation and have to be interesting for new students. This problem can be compared to the increasing innovation pressure many companies are facing.

One solution that proved to be useful in increasing the innovativeness of companies is the adoption of the Open Innovation paradigm. After Open Innovation was introduced by Henry Chesbrough (2003) companies started opening their innovation processes to their customers, suppliers, employees or other stakeholders in order to improve existing products, invent new products, optimize processes or identify new markets and target groups (Gassmann and Enkel, 2004, Gassmann and Enkel, 2006, Chesbrough, 2003, Di Gangi and Wasko, 2009). For all of these activities Chesbrough makes a clear distinction between the inside-out and the outside-in perspective of Open Innovation. The inside-out perspective tries to open up the company's distribution. This can be done by identifying new markets for new products, licensing innovations to external organizations or creating spin-off companies to bring innovative products to market that do not fit the current company's portfolio. The outside-in perspective, on the other hand, aims at generating innovative products or services by increasing external influence on the early phases of the innovation processes. Figure 1 displays the innovation funnel with the most important phases of the innovation process (Chesbrough, 2003).
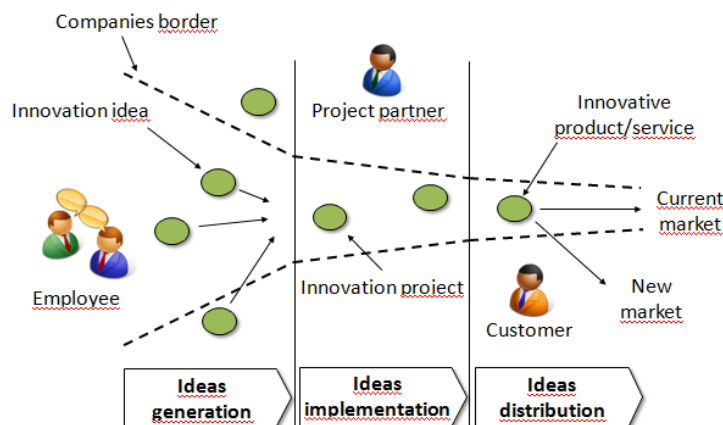


**Figure 1:** The Open Innovation funnel and the phases of the innovation process (Based on Chesbrough 2003)

The most important source for innovative product ideas in this context are customers of a company. Typically, this is done with lead user workshops (von Hippel, 1986) or similar approaches with small groups of selected customers.

The recent availability of broadband internet connections has opened up new potential to profit from customers' insights into a company's products and services (Soll, 2006). Using web-based platforms, it has been possible to address large groups of customers at a very low price since the early 2000's.

Current concepts for the introduction of Open Innovation into private companies are usually not easily applicable to a university context. The most important reason we identified is the decentralized organizational structure of the university and the lack of a dedicated innovation of R&D department, which might be able to filter, develop, and internalize external ideas. This paper systematically develops a concept that allows universities to use tools and approaches from the Open Innovation context to integrate their students into the development of the university to increase their innovativeness. This paper focuses on a theoretical and a practical goal. The theoretical goal is to develop an approach for enabling crowdsourcing and collective intelligence for Universities through an Idea Community and to better understand underlying mechanisms and principles in this context.

The practical goal is to apply the developed approach to the real-world situation in a German University and thus improve the University's innovativeness.

## 2  Virtual Ideas Commuities

Virtual innovation communities are web-based platforms combining the creative potential of virtual communities and the goals of an outside-in Open Innovation approach (Janzik and Herstatt, 2008, Moore and Serva, 2007, Leimeister et al., 2003). Virtual communities are communities of people with common interests, which often use web-based platforms for communication and knowledge exchange. Community members interact with each other and collaborate on different kinds of projects e.g. Open Source software development or the organization of sport events.

The creative potential of virtual communities can be utilized as an Open Innovation approach. This paper will refer to virtual communities, which focus on the development of specific products or services as virtual ideas communities. Virtual ideas communities are usually organized by a company or organization willing to integrate external stakeholders into their innovative processes. The community members generate ideas for new products, services or processes that are absorbed, filtered, implemented and eventually marketed by the company or organization(Bretschneider, 2010).

While this process works well for many private companies, many public organizations do not have an R&D department capable of filtering and developing early stage ideas. This makes it necessary to develop a new approach that fosters user collaboration in order to support the community in generating not only original but also far elaborated  ideas that allow easy decision making and implementation for the organization (MacCrimmon and Wagner, 1994, Dean et al., 2006).

## 3  Research design

This paper constitutes an analytical and conceptual work to develop an approach for Open Innovation for universities.

The integration of students into the development of the university can also be described as a collective intelligence approach following the definition that collective intelligence are "groups of individuals doing things collectively that seems intelligent" (Malone et al., 2010). Therefore we applied a framework of Malone et al. (2010) that defines the genomes of collective intelligence following four basic questions: "What is

being accomplished?", "Who is performing the task?", "What Why are they doing it?" and "How is it being done?". Malone allows a specific set of possible answers for each of these four questions, describing any given task to be solved using a crowd based collective intelligence approach (Bretschneider et al., 2012). A summary of the framework is given in Table 1 This framework allows the development of a tool utilizing the collective intelligence of the students.

Following this framework and applying it to the environmental characteristics and limitations of the university, this paper will develop a concept for the idea development process on a virtual ideas community for universities.

**Table 1**: Summary of the basic framework

| Question | Gene |
| --- | --- |
| Who | Crowd |
| | Hierarchy |
| Why | Money |
| | Love |
| | Glory |
| How-Create | Collection |
| | *Contest* |
| | Collaboration |
| How-Decide | Group Decision |
| | *Voting* |
| | *Averaging* |
| | *Consensus* |
| | *Prediction market* |
| | Individual Decisions |
| | *Market* |
| | *Social network* |

Source: Malone et al. (2010)

## 4  Concept development

### Characteristics of the university environment

The target group for the platform to be developed are all students of the university. The number of students in most European universities is too high for all or most of the students to be organized or know each other. Therefore one important requirement for the underlying idea development process is that the communication and organization of collaborative work has to be directly supported within the process. The assumption that the students will use other means of communication cannot be made.

Another important characteristic of the university is the special organizational structure mentioned before. University organization is usually very decentralized. Faculty executives have a lot of authority within their departments and therefore different departments within the same university can have very different approaches when it comes to picking up innovations and implementing them on an operative or organizational level. Usually there is no department that can be compared to a central R&D department, which is very common in private companies. In companies supporting active customer integration through web-based platforms one common task for the R&D department is filtering and elaborating not only ideas developed internally, but also by the customer or other external stakeholders. The lack of this function of the R&D department needs to be compensated through platform functionality as good as possible. In order to take these characteristics into account, the idea community needs to support the collaboration among the participating students. This will make it possible for the students to communicate on the platform without having to meet in parson. Additionally the collaboration support will enable the community to generate high quality ideas that can directly appeal to faculty executives and do not need to be elaborated any further before they can be put into action.

## The Idea generation process

As explained above, we understand a virtual ideas community as an implementation of a collective intelligence approach. Therefore, the development of the idea generation process implemented on the platform will follow the genomes of Open Innovation framework by Malone et al. (2010). The basic question to be addressed following this approach is the definition of the task: "What is the task to be performed by the participants?" Malone et al. (2010) distinguish between "Create" and "Decide" tasks. Create tasks are tasks that aim on the creation or generation of an artefact. This can be any physical, conceptual or textual artefact. In our case create tasks will be all tasks involved with generating, formulating or elaborating of ideas for the university. Decide tasks represent any task aiming on the reduction of the number of generated artefacts by deciding, which artefacts are kept in the process and which artefacts are dropped. Since the process of idea generation and implementation in the university involves several different steps of generating, reducing and elaborating the students' ideas. Therefore the question if the idea generation cannot be answered universally, but for every sub-task in the process. In order to break down the idea generation we follow a Diverge-Converge-Elaborate pattern.

## Diverge

In a first step we diverge by collecting as many ideas from our students as possible. This step provides us with a set of ideas the best ideas can be selected from. The idea generation is completely done by the students. The platform supports them by offering tips and an appropriate form to enter and spread their idea. According to Malone et al.'s genomes of Collective Intelligence this would represent a "Create" task starting our idea generation process. The actor in this particular sub-task of the process is the community of students participating by posting their ideas. Malone refers to the community as the crowd. Malone's next question "Why are they doing it?" refers to the motivation of the crowd. In the case of the virtual ideas community for students the reasons for contributing are

manifold. One the one hand some of the students will contribute to display their creativity and engagement to the community, while an important motivation for other students is to change to university for good. Since there are no monetary incentives involved in the process, the question would be answered with "Love" and "Glory". The last part of the task's genome is the identification of the way how the task is being performed. In order to be able to collect a large diversity of ideas, everybody is invited to freely contribute whatever is on their minds. Therefore the "How?" question is to be answered with the "Collection" gene.

*Converge*

The next step in the idea generation process focuses on converging the pool of ideas collected in step one. This step is necessary, because the number of ideas that can actually be adopted and implemented is limited. In order for the implemented ideas to reflect both, student's demands and university policy, the process will include a two-step decision process.

The platform will feature a rating system allowing students to vote for their preferred ideas. The best rated ideas will then be discussed by a jury of university board members, who decide which ideas are candidates for further elaboration and implementation. According to the applied framework, both sub-tasks described here can be categorized as "Decide" tasks. The key difference in the two converge sub-tasks can be found in the "Who?" gene. The voting on the community platform is performed by the crowd, while the jury decision is being carried out by the organizational hierarchy. While the crowd is motivated for voting by "Love", e.g. they want to improve conditions in the university, the jury members are paid for their work. So the "Why?" question has to be answered with "Money". The question "How is it being done?" offers several options for the crowd based decision of best ideas. In this case we decided to use "Voting" as a sub-category of the "Group Decision" in the framework. Malone treats hierarchy tasks as black boxes in his framework. Therefore the "How?" gene cannot be filled based on his work. The decision making in the university cannot be expressed by simple patterns, since it is highly depended on individual university policy. The decision making process of the university is not pre-defined by the process described in this paper.

*Elaborate*

The purpose of the idea elaboration is to make the idea directly implementable for the university and defining details that have been missing in the first idea the crowd and the jury initially approved of. Due to the before mentioned lack of an R&D department of some sort, the further elaboration of the ideas is not carried out within the organization. By crowdsourcing (Howe, 2008) the idea elaboration this process gains its applicability to public sector organizations like universities. The idea elaboration is obviously a "Create" task carried out by the "Crowd" since the crowd is significantly altering and improving the given idea. Since there are no monetary incentives given to student participants in the process, the motives for them are again "Love" and "Glory". The task is being carried out through a collaboration approach, since the elaborated idea is not just a collection of student's ideas but the result of a joint effort of creating one elaborated idea including detailed planning of the possible implementation (Antikainen et al., 2010).

Table 2 shows the categorization of the idea generation process according to the applied framework

**Table 2** Summary of the idea generation process

| Task description | What? | Who? | Why? | How? |
| --- | --- | --- | --- | --- |
| Diverge | Create | Crowd | Love, Glory | Collection |
| Converge - Students | Decide | Crowd | Love | Voting |
| Converge - University | Decide | Hierarchy | Money | Not applicable |
| Elaborate | Create | Crowd | Love, Glory | Collaboration |

## 5 Discussion and contribution

This short paper is an example for the application of the "Genomes of collective intelligence" framework by Malone et al. (2010). It shows how the framework can guide the conceptual design of a crowd based idea generation process that is tailored to meet the specific environment of its application. This is a strong confirmation for the applicability of the framework.

The most significant limitation to this paper is that the process described has not been evaluated in practice, yet. Future research should focus on the design of the ideas community platform for a German university and the evaluation of a pilot implementation of the platform.

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