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Is InnoCentive still the first Open-Innovation platform?

Research Master's Thesis submitted by
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Introduction

Everybody knows the international television game show « Who Wants to Be a Millionaire?». When struggling with a question, the contestant can call an expert friend but the time with this expert is very short to explain the problem and get the answer. Plus, the answer is not always very clear. Hopefully, the contestant has another lifeline : « ask the audience ». 91% of the time, the game show audience gives the right answer, while the expert friend has the correct one 65% of the time[1].

This game show brilliantly illustrates the power of the crowd, that some authors describe as a revolution. « In crowdsourcing we search… » they would say. The Open-Innovatoin platform InnoCentive uses exactly the same model : ask the audience to solve your issues. But even bettter, unlike the game show, the audience has a real incentive to come back as those who gave the correct answer shall receive an award.

This thesis -with InnoCentive has an illustration- explores the confluence of Crowdsourcing and Open-Innovation.

The Crowdsourcing aims to obtain needed services, ideas or content from a large group of people, while the Open-Innovation is the practice of acquiring sources of innovation outside the internal boundaries of the company. The notion of platform is therefore fundamental : this is a place where Internet users can upload their contribution.

Five to ten years from now, the Open-Innovation platforms was an important question and many papers have been written on this topic and about InnoCentive. In 2016, InnoCentive CEO Craig Jones said : « After 15 years we remain the global leader in Challenge Driven Innovation » But is it so ? Is InnoCentive still the first Open-Innovation platform? Despite its importance, this is a surprinsingly unexplored question. In this industrial « ecosystem », very large players have appeared, rising the competition for the pioneers. The behavior of platform owners towards the other firms in the ecosystem should have been subject to questioning. In persuance of its intial policy, InnoCentive is still active, proposing challenges to a community of solvers, and facilitating the work of companies looking for a new way of doing innovation.

[1] http://onlinelibrary.wiley.com/doi/10.1002/cpe.4168/abstract Retrieved on 2017, July 27

The literature suggests different approachs to shape the business model of a two-sided market. While some models suggest not to entry a complementary market to preserve the incentive to innovate, others suggest to stay in its niche and be the expert for this area. In this regards, the first part consists of a literature review aiming to present the main concepts behind the theory of InnoCentive : the Open-Innovation and the Crowdsourcing, with the works of H. Chesbrough and J. Howe, but also the two-sided market theory. Of course, a presentation of InnoCentive shall be drawn up to understand the history of the company, its background and curent situation.

The second part drives the methodology and presents the data collected. This methodology –divided in three chapters- puts in perspective the literature review. Explaining the use of a quantitative analysis rather than a qualitative or enumerating the pros and cons of KPIs, this part will give the reader the guideline to the final results.

In the third a final part, the methodology will be applied following the same structure. Starting with an exclusif focus on InnoCentive, the analysis will determine whether or not the platform is able to leverage the right ressources to be viable and to reach its breakeven point. Examining the competitors of InnoCentive will then be critical to position the platform in the industry. Finally, there will be some questioning of the all market of Open-Innovation platfrom. Based on these answers, the author will be able to confirm or not if InnoCentive still is the first Open-Innovation platform.

Part 1 : Literature Review

CHAPTER I: Open-innovation and crowdsourcing; Two major Concepts

Section 1: The Open Innovation overview

The rise of Open-Innovation

In the globalized economy, demand for new products and processes forces the industries to continually re-assess their structure. Innovation can therefore be described as the catalyst to growth, the lifeblood of most companies. It is not only about the product they bring to consumers, it is also about the process they use. Innovation has many faces and companies are keen to mobilize their employees to create that culture where innovation is encouraged across the board.

Not so long ago, most of the companies in the field of technology and innovation management thought the only way to generate a successful innovation was "control". A company should have an overall control, from the generation of the process to the secret of selling the final good. The mentality of "do-it-yourself" was supposed to be the only way to be ahead in terms of innovation. But this situation was quickly difficult to maintain for companies with the rise of the mobility among the knowledge workers (Herzog & Leker, 2010).

Nowadays, new technologies have revolutionized ways of communication, facilitating relations between the stakeholders and the organization. The innovation management has been reshaped due to three factors (1) The increasing availability and mobility of skilled workers, (2) The growth of the venture capital market, (3) The increasing capability of external suppliers (Chesbrough, 2003). Firms have achieved the crucial matter that the overall control could have reached its limits and that they should use external resources to develop their innovation projects, leading them to switch from a Closed Innovation perspective to an Open Innovation model.

The concept of Open-Innovation has first been introduced in 2003 by Henry Chesbrough using the following words: «Open innovation is the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for

external use of innovation, respectively» (Chesbrough, Vanhaverbeke & West, 2005). Among researchers and practitioners, this new concept has aroused a lot of interest due to its great potential benefits. Indeed, the main idea behind this definition is that companies can reduce their R&D costs by incorporating external knowledge (Chesbrough 2006). For the first time, there is a clear distinction in the business model between "creating value" and "capturing value", which originally was achieved by the same business actor. It is therefore a particular kind of outsourcing, but as Eric Schenk emphasized: "it cannot be reduced to this aspect because it is a two-way process involving selling and buying knowledge and processes".

Nevertheless, Open-Innovation was criticized by some authors who believed this concept wasn't new and was just an agglomerate of the results of previous researches (Trott & Hartmann, 2009). Indeed, Open Innovation doesn't have to be seen as a dramatically new concept, but more as a theoretical background describing the evolution of the management of innovation towards different perspectives. (Chesbrough, Vanhaverbeke, & West, 2005; Lichtenthaler, 2011). Of course, some examples can be found throughout history but the trends have recently increased as a result of environmental trends (i.e. the availability of risk capital, product interdependence, intensity of innovation exchanges, the emergence of innovation agents, accessibility of information) (Rigby & Zook, 2002).

In the 90's, the network model was a successful innovation one, but not an Open Innovation model, as the development and the commercialisation were internally based. To contrast the Open Innovation with the existing theories, Chesbrough (2006) highlighted eight features:

Point of Differentiation for Open Innovation, relative to prior theories of innovation

1. Equal importance given to external knowledge, in comparison with internal knowledge.
2. The centrality of the business model is converting R&D into commercial value.
3. Type I [Idea initially considered promising which ultimately proves unsuccessful] and Type II [Idea initially considered to be unsustainable in relation to the business model but which in the end shows a commercial value] measurement error (in relation to the business model) in evaluating R&D projects.

4. The purposive outbound flows of knowledge and technology.
5. The abundant underlying knowledge landscape.
6. The proactive and nuanced role of IP management.
7. The rise of innovation intermediaries.
8. New metrics for assessing innovation capability and performance.

Mechanisms of Open Innovation

The Closed-Innovation system might have worked very well for many companies in wide range industries, but there is too much knowledge available in too many areas all over the world these days to try to do it all by yourself. What is needed instead of a closed model is an open model. The figure below represents the two different models as imagined by H. Chesbrough; there still is in the Open Innovation model an R&D funnel turned on its side but there is many more pathways into the model for ideas to come in, not only from inside but also from the outside. In terms of those ideas, some are taken into a market and some of them go through the company own processes but others go through other processes such as licenses, spin off or joint venture to get to the market.

According to the author about this concept, to disseminate the Open Innovation model to the general public, "it is much more coming in and much more open coming out".

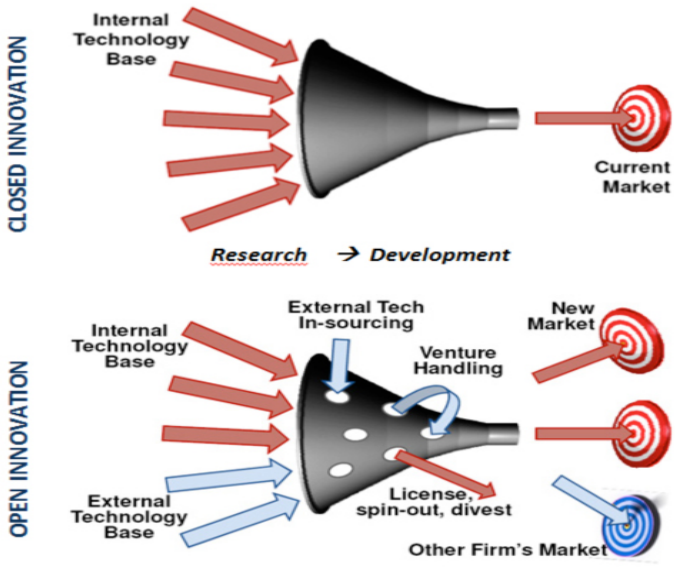

Figure 1-1 : Open-Innovation vs. Closed-Innovation mechanism by H.Chesbrough

Open Innovation is a generic definition that encompasses a large range of practices and the combination between internal and external resources has many forms. We can differentiate three main processes, which are in fact, a decomposition in the locus of innovation. (Pénin, Hussler, & Burger-Helmchen, 2011).

1. Inside-out, where the firm spreads its knowledge and resources to the outside, using the Intellectual Property rights. Those right are used to protect the final goods and processes in order to keep a competition advantage. It can be seen as a source of profit for the company as it generates value using a different pathway to the market.

2. Outside-in, is the other way around; the company captures knowledge or acquires a new technology which has been developed by an external source. This process is the expression that "the locus of knowledge creation does not necessarily equal the locus of innovation" (Enkel Gassmans & Chesbrough, 2009).

The most direct way to sell a technology is probably to grant a patent license or IPR. Chesbrough insists on the fact that this is one of the central pillars of Open Innovation. The market of knowledge and technology has grown substantially and will continue to do so (Guellec & Pluvia Zuniga, 2009). It is a real help for small technological firms in order to sell out their technology. Big companies also take advantage of it such as IBM, with the 8 088 patents they have granted to its inventors in 2016 (IBM, 2012).

A more radical modality than granting or buying a patent, or even trading them with a patent pool agreement, is to buyout small successful start-ups and therefore fully enjoy their patent portfolios and develop the innovation on their own. On the same scale, a spin-off is justified if it gives more focus and profitability to the de-merged business unit and the latter is usually are a great target to buyout as they represent a significant source of growth. This is the reality of innovative co-creation where firms give and take knowledge, either in the form of alliances, cooperations or joint-ventures

3. The coupled process

Finally, the third practice of open-innovation is a smooth combination between the outside-in (leveraging external ideas and technology) and the inside-out (making

innovations accessible to external users) processes. However, the 'Coupled' process is not only a combination of mechanisms specific to the two models above, but also develops other processes for example, strategic alliances or consortia (Chesbrough & Bogers, 2014).

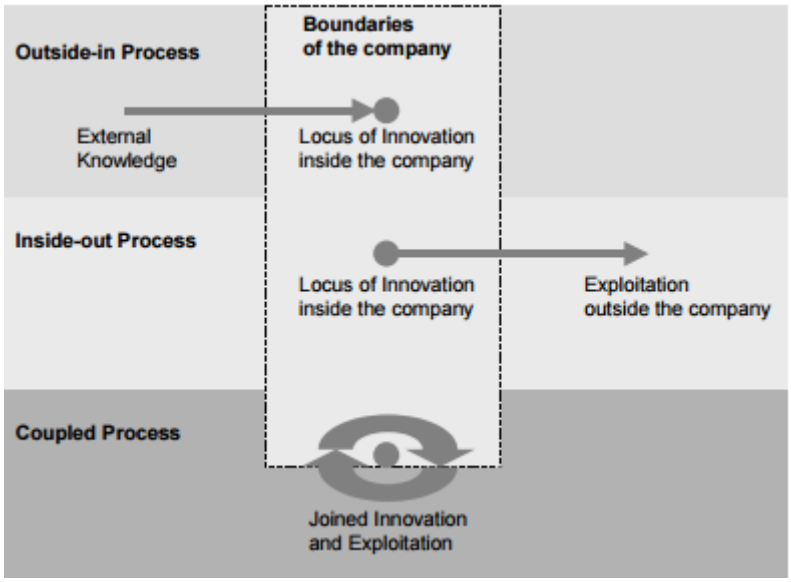

Figure 1-2 : Decoupling the locus of innovation process (Gassmann & Enkel, 2009)

To conclude, since the three concepts were presented as three different strategies, it would be easy to think that a company wishing to open its innovation process should choose from one of these three modes. However, they can also be complementary. Companies therefore choose a main process while integrating, to a lesser extent, the mechanisms of other strategies (Gassmann & Enkel, 2004; Gassmann, Enkel & Chesbrough, 2010).

All those inside-out or outside-in processes of innovation can be very interesting as they diversify the risk and share the uncertainty with the outside partners. According to Innoviscop - a firm specialized in innovation- we can identify eight categories of business actors taking part into the (open) innovation process:

All those actors who at first were some potentials threats for a company, have become a source of knowledge and innovation for the company. The boundaries between a firm and its environment have changed: it is porous and innovations can easily be transferred from one side to another, inward or outward. In 2006, Huston and Sakkab (2006) performed a study on the consumer goods corporation Procter & Gamble. Despite its

enormous resources, the company couldn't perform all its innovation in-house. Their program "Connect and Develop" illustrates perfectly the importance of the business actors, as the company invests two billion dollars every year in innovation. But the interesting conclusion is that the global network of external partners is the main source of innovation.

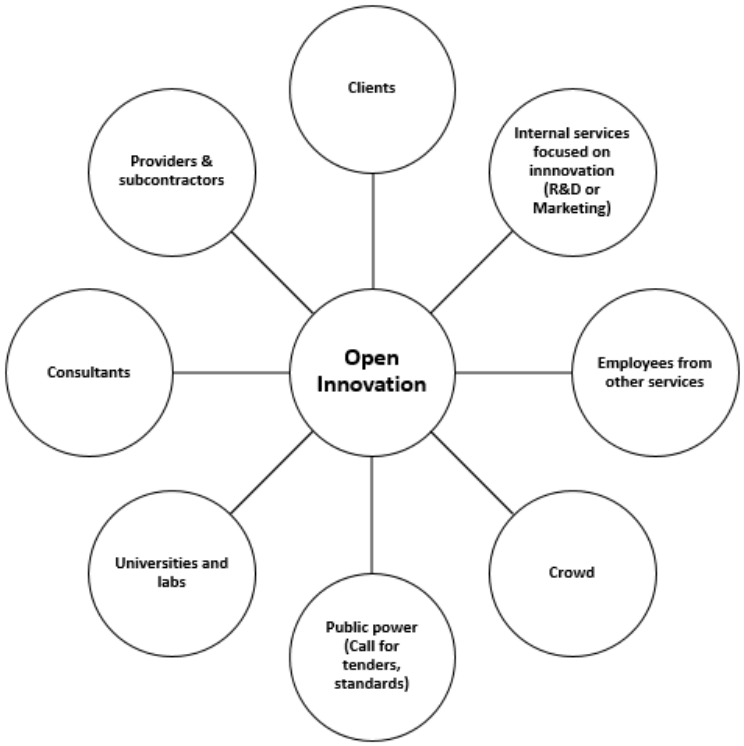

Figure 1-3 : Business actors taking part of the innovation process according Dehan (2014)

The choice of a definition

In this thesis, the definition proposed by West and Gallagher (2006) will be retained: «systematically encouraging and exploring a wide range of internal and external sources for innovation opportunities, consciously integrating that exploration with firm capabilities and resources, and broadly exploiting those opportunities through multiple channels. » (p. 319). This definition enables to present the concept as a whole, without limiting its scope (i.e. modes of innovation, characteristics of the organization).

Furthermore, the main movements between an organization and its environment at each stage of the innovation process, are presented.

The Future of Open Innovation

Mostly active in high-tech industries, the Open Innovation phenomenon has shown some great outputs thanks to its ability of quick changes and continuous movement. Nowadays, those fields tempt to grow rapidly and the danger upon it is to become a short-term fashion with short product life cycles and high production costs that even some large companies cannot afford. The risks taken by an entrepreneur to innovate have increased due to this short-term fashion and the Open innovation allows to spread those risks amongst the business actors as the structures move from standalone to alliances, whether they are verticals or horizontals, cross-industry R&D partnership is a strong trend.

In consideration of the foregoing, we can also expect a more global development of technology and product, making the open innovation easier in a flat world. (Gassmann, O., Enkel, E., & Chesbrough, H., 2010)

Previously, the author has mentioned a large amount of high tech examples using the open innovation: IBM, Intel, NASA, … but what about the low-tech industry? Will the open-innovation management be spread in sectors such as mechanic, medical tools, fast moving consumer goods, architecture or logistics? In the same perspective, it is more likely that small and medium enterprises (SME) are willing to open up their innovation process. Nevertheless, those fast growing global scale SMEs indicate the protection and leveraging of their intellectual property as being the source of their competitive advantage. The question remains and as quoted by O. Gassmann: “How far will open innovation go and how long will it last?”

As showed on the following figure, the border between open innovation and open source seems difficult to define, especially when talking about innovative communities and crowdsourcing. The next section will therefore focus on the definition of the crowdsourcing and its distinction with Open-Source.

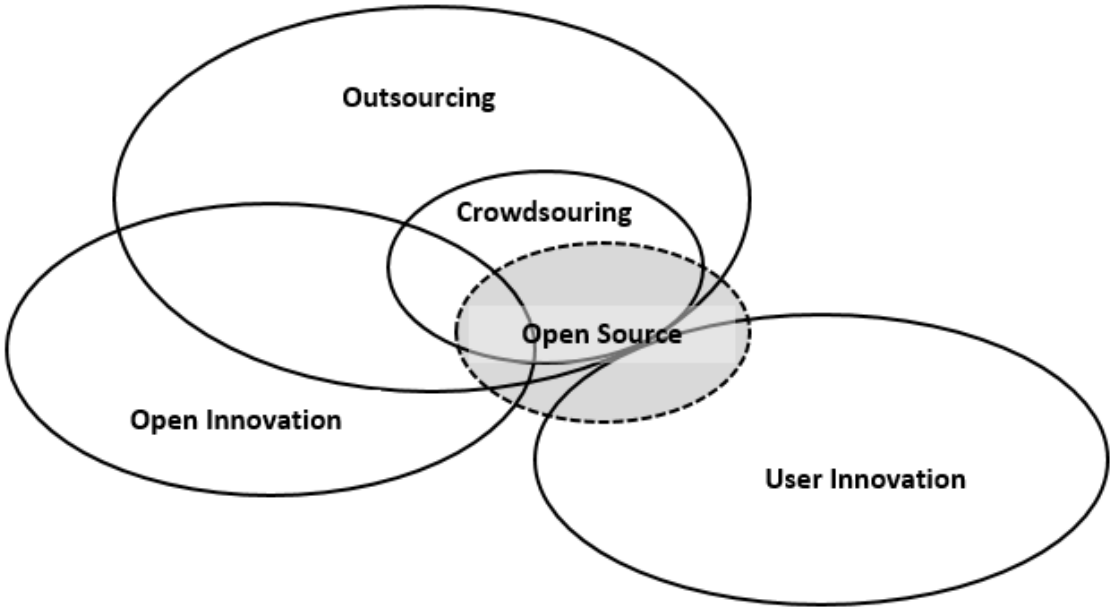

Figure 1-4 : Boundaries between Crowdsourcing, Open Innovation, User innovation and Open Source (Schenk, 2009).

The common feature between Open innovation and Crowdsourcing is the following: "knowledge is distributed and the opening of a firm's R&D processes can be a source of competitive advantage" (Schenk, 2009).

According to Chesbrough (2006): "Open innovation explicitly incorporates the business model as the source of both value creation and value capture [...] while open source shares the focus on value creation throughout an industry value chain, its proponents usually deny or downplay the importance of value capture". More specifically, the second difference between Open-innovation and crowdsourcing are the interactions between the business actors. In the first case, there are two companies interacting with each other, while in the second case it is a company interacting with the crowd. The last one can be individuals or communities, but in every case they don't report as being a company.

Section 2: History of crowdsourcing

The purpose of Crowdsourcing

Whether the definitions of both open innovation and crowdsourcing are quite recent, we can find lots of applications throughout History where both concepts work together. For instance, during the French Empire, Napoleon's "Grande Armée" faced a lot of health issues due to poor food preservation. In 1810, he organized a competition and raised a price of 12 000 Francs for the winner. Nicolas Appert won the prize with his revolutionary process, the "Appertisation" and discovered the ancestor of the metallic cans.

Many other dramatic innovation successes could be mentioned, from the steam engine to aviation technology breakthrough, but the first definition of crowdsourcing appeared in Wired Magazine (2006) expressed by Jeff Howe as: "the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call. This can take the form of peer-production (when the job is performed collaboratively), but is also often undertaken by sole individuals. The crucial prerequisite is the use of the open call format and the large network of potential laborers."

The author continues the definition by explaining the features of the crowd. His model relies on five principles: (1) the crowd is scattered around the world, (2) the crowd has limited time to dedicate, (3) the crowd is full of specialists, (4) most of the time the crowd produces poor results; the firm needs a good filter system to identify the right specialist(s) and (5) thanks to the comments and assessments, the crowd is a good filter to poor results and quality eventually picks-up.

This definition encompasses a large diversity of crowdsourcing practices. Schenk and Guitar (2009) have characterized two different aspects of crowdsourcing: selective and integrative.

-Integrative crowdsourcing

For this first aspect, the individual added-value is very small. It is the overall contribution and the complementarity between the individuals (who together form the crowd) that creates value to the firm. For instance, the Traffic option within the Google Maps application is a kind of integrative crowdsourcing. The cellphone constantly records the current location of the user and analyses its speed. As Google product manager Dave Barth stated: "When we combine your speed with the speed of other phones on the road, across thousands of phones moving around a city at any given time, we can get a pretty good picture of live traffic conditions"[2].

With a network of passionate volunteers, a simple (by its structure) open source software can be one of the most popular websites. Wikipedia is the online encyclopedia everyone is using, YouTube and eBay are two successful businesses that only have been possible with the contribution of users. By now, those open source softwares that used to be the initiative of hobbyists or part-timers like Linux interest everybody as they have discovered the potential of the crowd. It is not free, but compared to pay a full-time employee, it costs a lot less.

-Selective crowdsourcing

On the other extreme, the client company who benefits from the crowds input will choose among all the provided answers the one that suits its needs best. This is a configuration in which both the consumer and the company jointly innovate. If one is searching for selective crowdsourcing, the example of the toys company Lego remains the most famous. (Dehan, 2014).

In 2004, Lego is on the verge of bankruptcy and struggles in all its different strategic channels; bricks toys, theme parks, video games, The year after, freshly elected CEO Jørgen Vig Knudstorp changed the strategic vision of the company and wanted to create more links with the consumers (Lauwaert, 2008, pp.226-227). The Lego Ambassadors program is launched in order to interconnect the different users communities and integrate them into the manufacturing process. (Open your innovation, 2010). With this

[2] https://googleblog.blogspot.fr/2009/08/bright-side-of-sitting-in-traffic.html

method, a new economic agent is created: the "working consumer", who by their actions, create a significant economic value. (Archak, 2010).

User communities have now spread in every industry; as mentionned earlier, the consumer goods company Procter&Gamble also has its own program "Connect and develop". This software is a true success for the firm, who claims that 35% of its products have at least one component coming from the Open-innovation. (Huston & Sakkab, 2006). Not only the consumers bring innovative ideas to the company, but they also express needs that the company would not have perceived otherwise.

The Market of Ideas

A new market of ideas and innovations has been created with the use of portals connecting firms and Internet users. In this situation, the targeted public is wider than in the previous case which focused only on the stakeholders - the parents in LEGO's conception system - but the concept remains the same: a company in need - "the seeker"- expresses its innovation issues to a mass of contestants called "solvers" (Trompette, Pelissier, Chanal, n.d.). Most of the time, those seekers are professors, academics or consultants specialized in the particular field, while the seekers are mainly big corporations such as Solvay, Johnson&Johnson, IBM,... or sometimes foundations for research. We can for example mention the Rockefeller foundation or Pize4Life (Tapscott & Willimans, 2007).

This innovation issue is expressed in the form of a contest, where the seeker purchases the winning solution. This bounty or prime, which will later be discussed in this thesis, represents a main source of motivation for the solvers, who of course will also take into account the difficulty of the task and the competition level. Innocentive, the first platform to start operating in 2000 with the initiative of the pharmaceutical company Eli Lilly, is now worldwide renowned for its challenge problems, mainly in the field of chemistry, engineering, or computer science.

According to Chanal and Caron-Fasan (2010), these kind of portals - similar to Innocentive - are at the edge of crowdsourcing due to the fact that discussions are limited between the consumer -who brings an idea - and the company. Under any

circumstance, a second or a third consumer will join efforts; it is an individual work leaving no space for collaboration. If the reader remembers the definition from Howe: “The crucial prerequisite is the use of the open call format and the large network of potential laborers.”

The framework of open-innovation and the different aspects of crowdsourcing have been explained, a focus on those crowdsourcing prize contest platforms will be put. As it has been defnined so far, Innocentive is a hybrid model with the features of both the Open Innovation and the Crowdsourcing.

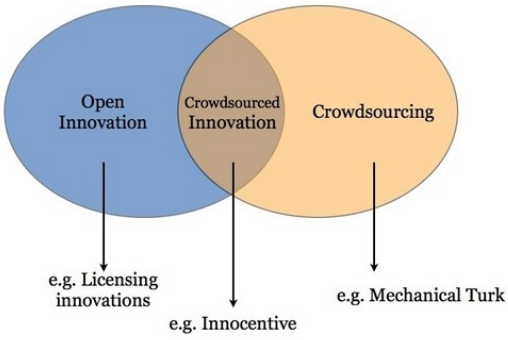

Figure 1-5 : The difference between Crowdsourcing and Open-Innovation (Quora, n.d .)

CHAPTER II: Challenge browser platform

Section 1: The Two-sided market

Definition

A two-sided market (or multi-sided) is defined as a market where a platform enables interactions and networking between end-users and tries to "bring on board" each side of the market, as the participation of one group rose the value of the participation of the other group. But one cannot restrict the definition to this feature. Indeed, from this point of view, every market is a two-sided market, because to create a market, a buyer and a seller need to meet and gain from the trade that has been realized. To go further, one would "define a two-sided market as one in which the volume of transactions between end-users depends on the structure on not only the overall level of fees charges by the platform" (Rochet and Tirole, 2006).

In their papers the authors illustrate the two-sided market with the MasterCard example: one side represents the consumers having a MasterCard while the other side are the merchants accepting the MasterCard payment. Indeed, having a MasterCard will have more value for a consumer if the number of merchants accepting this kind of payment is high. This is a typical illustration of the "chicken-and-egg problem". As depicted on the figure XXX, this strategic issue appears when the value proposition of the two sides depends on the penetration on the other side.

Figure 1-6 : The Chicken-and-egg problem (Strategic Thinker, n.d.)

When talking about this concept, the "I know a two-sided market when I see it" comment is quite common. Therefore, the distinction with the one-sided market needs to be highlighted: if the burden sharing is bargained away by the end-users, if the information available between the buyer and the seller is asymmetric and if the price is determined through bargaining during the transaction or if it is a monopoly price-setting – but without membership externalities - then the market is one-sided.

Hagiu and Schmalensee (2004) reckon there are three different kinds of multi-sided market platforms: (1) The match-makers helping both sides finding their associate, i.e. stock exchange (2) The audience-makers matching advertisers and buyers, i.e. Yellow Pages (3) The transaction-based businesses organizing transactions between the two sides of the market, i.e. MasterCard. This last category is the most interesting one for us as it includes the innovation platforms as defined by Pelissier (2008) regarding the relation between both sides, the organization and the internet users.

Pricing and externalities

A good activation will be achieved through a proper pricing management (Rochet et Tirole 2006). Rochet and Tirole close their analysis by discussing on the pricing methods: the membership fee or the usage fee. For the MasterCard example, the consumers pay an annual membership while the merchant pays a fee for each transaction. Eisenmann, Parker and Van Alstuyne (2006) go even further in terms of pricing : usually, one of the sides is subsidized (subsidy-side) because the number of users on this side is the main source of value for the other side who pays a usage fee (monetary-side). The price discrimination between the two distinct groups of users is one of the key characteristics of a two-sided market.

Web 2.0

The two-sided market theory is also linked to the Web 2.0 phenomenon, especially in the case of InnoCentive. The term Web 2.0 is used to translate an evolution or, according to some authors, a revolution of the Web. If the Web 1.0 was characterized by fixed pages where only the website editor was able to bring some content, the Web 2.0 characterizes the evolution of the website user, coming from a static to a dynamic role as

the user can now add content on the website and by doing so, starts adding value to the platform he/she is using (Tapscott & William 2006). On the other side, the website architect becomes a platform manager and develops a business model to suit the new status of the user. The main pioneer who developed this concept is YouTube for sharing videos, Wikipedia for knowledge and of course InnoCentive for R&D processes.

With this new kind of platform, a new question has risen: Should the user be considered as a customer or as a resource able to add value?

Business model and managerial implications

New phenomenon, new ways of using the Internet and the platforms mean of course new business model to shape. Amongst the many definitions of Business Models, the author choses the one from Voelpel, Leibold and Tekie (2004) as it gives a synthetic view of the concept:

"The term Business Model can be defined as the particular business concept (or way of doing business) as reflected by the particular business's core value proposition for customers; its configurated value network(s) to provide that value, consisting of own strategic capabilities as well as other (e.g. outsourced/allianced) value network and capabilities to continually sustain and reinvent itself to satisfy the multiple objectives of its various stakeholders."

The platform manager is neither a single host who brings some storage space, nor a content producer; he is the intermediary, the editor and the animator of the platform who defines the Business Model of this one platform. The literature (Wargnier et al. 2004; Osterwalder et al. 2005; Lecocq et al. 2006) characterizes a Business Model with the following elements: (1) the value proposal for the clients, (2) the production infrastructure, (3) the position of the company in the chain-value and (4) the revenue model. This original concept of Business Model needs to be reviewed with the Web 2.0 as:

- The platform manager has to deal with multiple targets, at least two, and for each, a new value proposal.
- Some knowledge and skills are owned by anonymous users

- Being free of charge for one of the side is a central pillar of those platforms.

Having two different value proposals, one for each side of the platform basically means that their manager has a potential innovative power on each side. If for one side of the market the pricing policy is to remain free of charge, the innovation power means finding new ways to value the user community, by proposing new services.

Just like most of the market with network externalities, the market for ideas is a two-sided market, as there is the user of a product -or service- on one side has an effect on the value of that product to users from the other side. To succeed, Rochet & Tirole (2006) mentioned that a platform like InnoCentive must "get both sides of the market on board". In the following section, the author would like to introduce InnoCentive and outline the business model of platform competition, i.e. how they attracted each side of the market while getting their competitive advantage.

Section 2: Open-Innovation and Crowdsourcing platforms

Whether InnoCentive or Kaggle may be some exceptions, as the challenges required highly advanced skills and complex knowledge of the area of competence, for most of the others platforms, people from anywhere and with any backgrounds can give their inputs on a project. Ideas come from everywhere and an entrepreneur can collect many different inputs from collective wisdom. "Exploration is the engine that drives innovation. Innovation drives economic growth. So, let's go exploring." This quote from the oceanographer Edith Widder get the measure of the innovative spirit of those companies. The appendix 1 lists the major platforms for Open Innovation regarding their targeted users or their business model.

Industry overview

According to InnoCentive: "Challenge and price competition are a severely underused tool that should be systematically instituted by governments in order to rectify the

considerable problems and market failures that exist within the innovation system" (InnoCentive White paper, n.d.B). Nevertheless, the risk that a challenge might be poorly expressed or executed could discredit the entire open innovation concept.

Not only private companies such as InnoCentive or NineSigma propose these kinds of rewarded challenges. It historically was a practice used a lot by governments or public organizations. Nowadays, some US institutions continue to propose some challenges, such as the H-price (see price capital). Nevertheless, those challenges are often poorly shaped and do not properly match with the community. An assumption would be to think that they are less likely to be bold due to the difficulties they face to justify a large award. InnoCentive warns governments about the use of innovation challenges as it takes expertise since the design of the challenge is important. (InnoCentive White paper, n.d.B).

Section 3: InnoCentive

As mentioned earlier, InnoCentive is an initiative of the pharmaceutical company Eli Lilly. More precisely, the idea came out in 1998 of two of its employees, Alpheus Bingham and Aaron Schacht, while they were exploring the applications of the Internet to business – the first name of their idea: "molecule.com". Eventually, the idea get off the ground three years later, launched by Jill Panetta, Jeff Hensley, Alpheus Bingham and Darren Carroll, who became the first CEO.
From its creation to 2005, InnoCentive was funded by Eli Lilly and Company before being spun out of control by Spencer Trask & Company. Appendix 4 shows the different rounds of funding and the investors since they are no longer part of Eli Lilly; from 2006 to 2011, InnoCentive has been able to raise $30,3 millions.

In February 2012, the Massachusetts-based company acquired for an undisclosed amount the UK-based platform OmniCompete, specialized in the areas of security, energy, healthcare and cloud computing. Those new offices have become the headquarter of InnoCentive for Europe, Middle East and Africa (EMEA) operations.

Simon Schneider, CEO and co-founder of Omnicompete is curently the vice-president and has taken the lead of the London office.

Main Operations

Innovation intermediaries are a new kinds of actors who can manage the relationship between innovative firm and innovation communities (Chesbrough, 2006). They are web platforms which function as marketplace and appeals for individual contributions through open calls on behalf of their customers, the private firms. (Channal, 2010).

InnoCentive is one of those exchange platform as described by Hagui and Schmalensee (2004), by the fact that it connects different categories of users in order to proceed with a transaction. This structure aims to outsource the innovation process, by an individual mean as the solvers do not collaborate with each other's.

Except from its crowdsourced challenge programs we will develop further, the company also proposes a collaborative SaaS-based Open-innovation platform called InnoCentive@Work. It enables the users to engage and manage innovations communities internally. Those communities can be composed of employees, partners, and customers generating novel ideas but also express some upcoming issues.

InnoCentive claims that more than 2000 external challenges have been expressed since the beginning of the platform in 2001, and almost one-third would have been resolved, finding a relevant answer in the 62 000 solutions that have been submitted.
Initially, the platform focused on pharmaceuticals challenges, due to its affiliation with Eli Lilly. But quickly, companies from biochemistry, genetics, or materials heard of the success of the platform and proposed their own challenges. So far, less than 100 firms have proposed a challenge.

As shown on the following chart, most of the challenges remain in the original research area of Eli Lilly, namely chemistry and life science. The solvers have therefore a high level of education as more than half of them claims to have a PhD, Lakhani said. (Lakhani, Jeppesen, Lohse, Panetta ,2007)

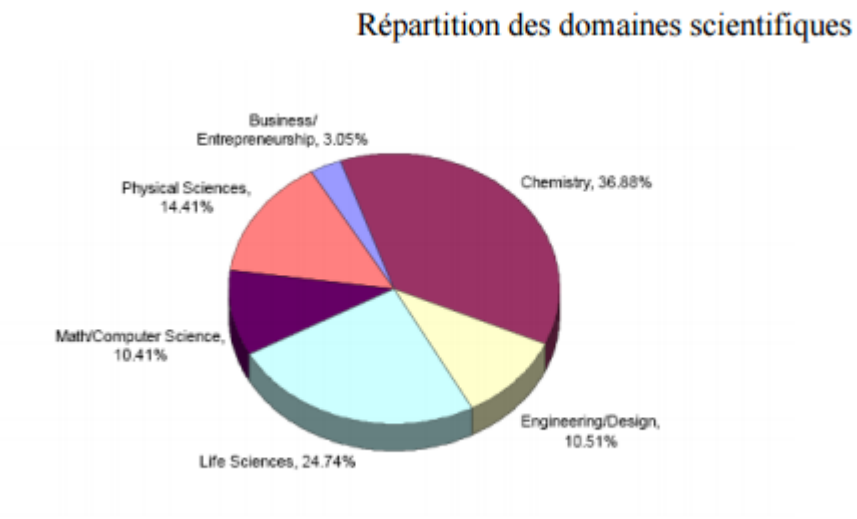

Figure 1-7 : Scientist area distribution (Liotard, 2010)

Starting in the late 2006, InnoCentive and the Rockefeller Foundation collaborate a lot, proposing many challenges in different fields of research in order to encourage the non-profit organization to participate. For two years, the Rockefeller Foundation decided to assume the fees asked by the platform to submit a problem, when that particular problem were proposed by a non-profit organization. They went even further by taking charge of half the price of the bounty originally proposed. Thanks to this action, a few researches against AIDS or tuberculosis were funded. Compare to the one-third success rate for a classical challenge, those proposed by the foundation had a big fervour and reach 80% success rate.

The challenges are rewarded by an average prize varying from $5000 to $100 000, even if several bounties up to $1 million can be denoted. InnoCentive claims they have accumulated $50 million prices over the last fifteen years.

Those bounties are for sure a major incentive for the solvers, coming from 200 countries to find the solution. They have been more than 380 000 to participate and submit a solution. For each problem around 200 solvers are interested in but only one-tenth upload their researches, for which they have spent in average ten hours (Lakhani, Jeppesen, Lohse & Panetta, 2007). Surprisingly, most of the solvers submitting an answer work in an unrelated field of research (Travis, 2008).

Strategic Overview

InnoCentive claims to be different from any other kind of platform by their expertise in designing a challenge for a seeker. Indeed, to have a successful challenge, targeting the right solvers is essential. The organization has hired a whole team of scientist from different fields in order to help a company to express the challenge. Sometimes it needs to be reworded or divided into several sub-challenges corresponding to several tasks easier to resolve, but also to ensure anonymity of the seeker - that InnoCentive particularly values. A whole trainee program, the ONRAMP (Open Innovation Rapid Adoption Methods and Practices), is proposed by InnoCentive to every firm asking for the help of the platform.

Once the challenge has been uploaded online, the solvers have on average 30 to 60 days to post a solution, which is rather short regarding the complexity of the challenges. When the time is over, InnoCentive gathers and filter the solutions and with the seeker, elect one or several winners. These winners will receive the price set at the beginning of the process. This is one of the fundamental pillar of InnoCentive; the price is always set ex ante and cannot be negotiate afterward.

The second pillar of InnoCentive business model is the way they manage the Intellectual Property Rights (IPR). The literature with Bessy & Brousseau (1997) has highlighted the difficulties within the market of patent and IPR. The architecture of the platform and the mechanisms in place to reduce the asymmetric information are a real added value for InnoCentive as they are committed to foster a good relationship between both sides.

Before a solver can upload a solution, he/she will be required to create an account and sign the “InnoCentive Solver Agreement” (a mettre en annexe) aiming to deal as soon as possible with the questions of IPR. If a solution happens to be the winning one, the IPR shall be transferred before the solver can receive the award. But on the other way around, the agreement also insures that if a solution is not selected by the seeker, the following cannot claims as being the legal owner of the solution. All those legal mechanisms, in addition with the anonymity of the seeker and the ex-ante award tempt to reduce as much as possible any uncertainties and the asymmetry of information.

From another perspective, the relation between the seeker and the solver is characteristic from a two-sided market (Rochet & Tirole, 2002). Indeed, InnoCentive comes in the middle of the seeker and the solver as a mediator and its only income are the fees the platform charges to the seekers; the solver does not pay anything to submit an answer. Therefore the calculation is easy; the more challenges are uploaded, the more InnoCentives revenue will grow. But only if the community of solvers is big, only if the percentage to receive a valuable answer to the challenge, the seekers will use the platform. In a further point, we shall develop the cost for a seeker to understand the struggle. InnoCentive wants to prove its solver community is reliable and comes from the most prestigious universities. For this reason, the company works in collaboration with a few university from the US, Russia or China. To gather even more scientists, InnoCentive facilitates some Team Project Room, an online workspace where solvers can invite one another and therefore make the community grow. The issue is that only the team leader solver will be rewarded.

Beneficials

In addition to the elements developed in the previous section, InnoCentive - and generally the Open Innovation - offers several incentives for both the seeker and the solver.

-For the seeker

When working on an innovation project, a company usually has three alternatives: (1) explore and develop the idea using internal resources, (2) go to an external consultant or (3) find external collaborators as universities. Using InnoCentive Challenges, one can access a much wider network of experts than with the previous alternatives and outreach innovators beyond the traditional field of the problem.

To quote Bill Joy from Sun Microsystems : “Most of the smart people work for someone else” (Bingham & Spradlin, 2011). And not only this approach offers you a wider networker, but also a faster research process, as illustrated by the BP spill oil case in 2010 in the Mexico Gulf. To manage the crisis, the oil company used the user community of InnoCentive to avoid a major environmental disaster. On average, a solver will work

74 hours on the challenge, while it would have taken around 6 months if developed internally by the corporation (Lakhani,). The explanation of this tremendous gap is rather simple: most of the time, the winning solver has already faced a similar problem and therefore knows the answer. “In 72.5% of all cases, the winner just reuse an existing solution from a previous task he or she solved in a different context.

Now it happens that most of the time, the seeker finds the solution of the challenge outside his field of expertise. That being said, we can imagine it would have been very unlikely for the seeker to find the solution on their own.

-For the solver

Prior research have proposed that solvers who attend a challenge for a crowdsourcing platform in order to develop their creativity and get recognition from their peers. Wasko and Faraj add that the contribution from an individual will be more important if he/she really perceive that recognition. The link between reputation and potential future earnings is not really clear but for instance, “there is evidence that sellers with good reputation on eBay enjoy higher sales and even price premiums. In another example, sellers on Amazon.com with better record of online reputation can successfully charge higher prices than competing sellers of identical products ” (Wasko and Faraj, 2005).

The Award being set ex ante, a solver from InnoCentive cannot benefits from his/her notoriety and charge higher prices. Nevertheless, InnoCentive takes good care of their solvers as they are the best way to attract new clients (the seekers). On their website, a whole tab is reserved for the “Top Solvers” and “Winning solvers”, resulting in a win-win situation for the website and for the solvers who might be approached by a seeker for their expertise.

Brabham (2008) with his research on Istockphoto - a similar platform to InnoCentive - emphasized three main motivations for the solvers : (1) make money, (2) develop individual skills and (3) have fun.

So far the strengths of InnoCentive has been described, but one might ask himself what the potential ROI of this platform might be. How come not every companies use it if it can save both time and investment?

Part 2: Methodology

Before going any further, let remind the reader the purpose of the thesis, which is answering the following question: *Is InnoCentive still the first crowdsourcing platform for Open Innovation challenges?* InnoCentive is one of the pioneers is this area and has driven many initiatives. Practical research has been driven in order to put into perspective the literature review, and based on the results qualify the foundings of the first part.

The methodology is structure into three different questions, where each question will help to evaluate the necessary conditions and capabilities that a company should master in order to be considered as efficient and prosper. Therefore, the analysis will start with a focus on InnoCentive's resources. The second step will have a wider interest as the author will analyse the competition and see if InnoCentive is able to out-perform the other platform. Finally, the analysis of the whole crowdsourcing power shall be performed to understand the context these platforms are facing.

The decision tree hereafter represents an overview of the complete framework to follow in this second part. In the third part of the thesis, this framework will be completed by applying the methodology and will serve as the sole basis to structure or line of argument and answer the question of interest.

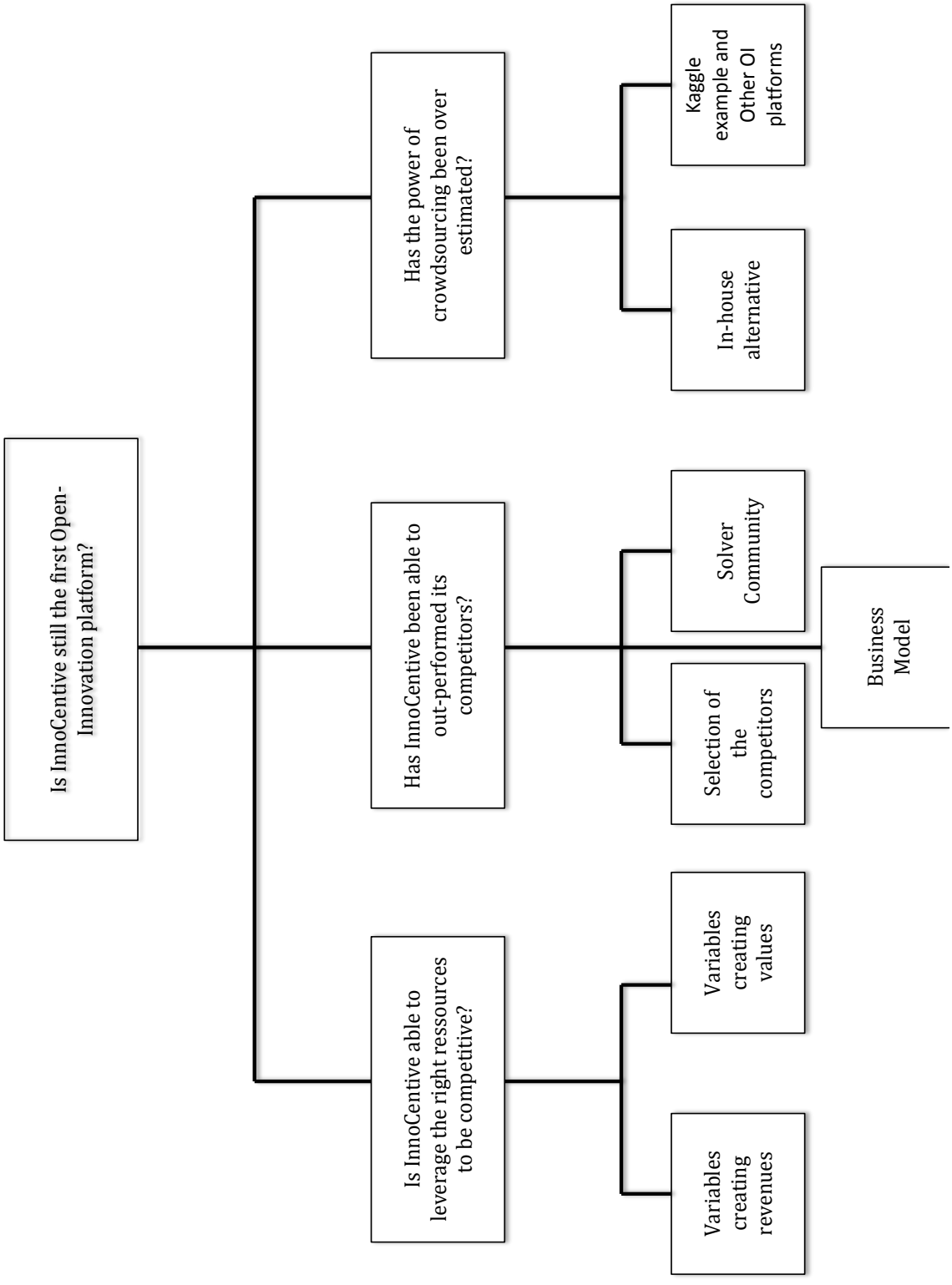

Figure 2-1 : Methodology framework Overview

The evaluation shall include both a quantitative and qualitative analyses. Assessing the capacity to innovate will be performed in the qualitative way while the quantitative analyses is more suited to evaluate the achievements and the execution of the strategy designed by the management team.

Qualitative analysis

« Different firms have different capacities to innovate and that a firm's capacity to innovate is a function of its culture, resources, competencies and networks ». This quote from the study of Andy Neely and Jasper Hii (1999, p1.) will drive the analysis based on their definition of these variables reported in the table 2-1.

Variables	Definition	Examples (innovative)
Culture	The culture is a set or rules or beliefs that influence the way the things are done in the firm	Openness, flexibility and consistent communication
Resources	Resources are a set of skills and assets that may be the source of a competitive advantage	Technology and multi-skilled workforce
Competencies	Competencies are skills and knowledge enabling the firm to exploit its innovative ideas	Idea generation capability and market knowledge
Networks	Networks are systems enabling different users to interact and exchange information	Customers, competitors and suppliers interface

Table 2-1 : Variables affecting innovative capacity (Neely & Hii, 1999, pp. 6-7 & 32)

Following the authors, this analysis of InnoCentive capacity to innovate will be achieve by collecting information and insights form the website of the platform, form academic sources and other reports.

Quantitative analysis

To measure a firm's performance toward innovation, many different indicators can be used. Benoit Gailly divided them into three categories: the inputs, the processes and the outputs (see appendix 2)

Regarding the lake of information for many of variables in these categories, our analysis will be focused on the number of partnership (inputs), the operational improvement (outputs) and the innovative image (outputs). Indeed, regarding the scope described by Gailly and the resources available, evaluating the processes will not be accurate or could not lead to some substantial results.

To perform this quantitative analysis, the author wanted to collect as much data as it was possible to do with WayBack Machine. The archive website took over 104 snapshots of the Challenge Center from December 29th 2010 to March 2nd 2017, or almost three pictures every two months.

Being a two-sided platform as explained earlier, the Challenge Center is the most important page on InnoCentive website. The company describes it as the place

"where InnoCentive connects Seekers and Solvers with a myriad of the world's toughest Challenges. Seekers post their Challenges in the Challenge Center and offer registered Solvers significant financial awards for the best solutions. Solvers can search for Challenges based on their interests and expertise." (InnoCentive, n.d.A)

CHAPTER I : InnoCentive's innovative capacities

In this first chapter, the author would like to present the methodology used to answer the following question: Is InnoCentive able to leverage the right variables to be innovative and competitive? In order to answer this question, it is essential to evaluate both the variables creating revenues and the variables creating value for the platform. In this context, InnoCentive would be considerate as competitive only if both the resources assessments give them concrete and visible outcomes.

Section 1: Variables creating revenues

The approach will follow two axis of research: is InnoCentive able to attract new clients, and is InnoCentive able to keep these clients and derives profits from them.

The first resources to analyse are of course those with a potential to generate earning for the company. As learnt from the theory of the two-sided market, for InnoCentive, the side of the seekers is the main revenue stream as it is the only side of the platform being charged. A decomposition of the revenue model of the platform will therefore be done in order to assess the financial profitability of the company. Dividing the annual revenue of a firm by the number of employees gives the "revenue per employee per year ratio". When comparing this ratio against other companies, it may indicate a higher productivity and effective use of the firm's resources.

Section 2: Variables creating value

After the analysis of the variables creating revenues for InnoCentive, the author will explore the other side of the market, the side creating value. This part does not bring back direct earnings but participate in the creation of the corporate branding of the platform for instance.

Following the same path of the previous section, but only this time with a focus on the solvers, the axis of research will be: is Innocentive able to attract the solvers and create a valuable community? The theory highlighted the virtuous circle where a valuable community of solvers will attract more seekers, proposing more challenges and rising the competition, which will attract more solvers… but where to begin? Probably by recruiting a qualified and innovative management team able to attract both sides by proposing new services.

CHAPTER II: InnoCentive's competition

After a first chapter focused only on InnoCentive strategy and execution, expand the field of study to InnoCentive's competitors in order to answer the second question: is InnoCentive able to outperform its competitors?

Once again, the author will quickly tackle the financial situation of the main competitors but this will not be the most relevant part of the analysis. The profitability of a platform is very difficult to assess, as they all are careful not to reveal those information. Nevertheless, some figures will have to be mentioned, especially regarding the funding background of the companies. A good alternative is to compare the results found in the first chapter, namely the community of solvers, the partnership and the strategy of the platform.

Performance measurement

The comparison of the three platforms will only be possible if the author is able to define a proper scale of performance. This performance measurement has to be simple yet effective in order to align those measures with the business strategy, structure and corporate culture. This will also enable to give more easily some recommendations about the variables that need to be leverage. In this regard, the financial performance will not be processed.

The performance measurement takes two axes of analysis: the community and the challenge proposition. Around these two axes, four driver KPIs will be deployed:

(1) Visibility; measures the platform presence on the social medias, using the share of voice as a metric

(2) Availability; measures both the frequency of published content (mainly the challenges) and the accessibility to the challenges

(3) Activation; measure the time it takes for a solver to be able to register and then be able to solve a challenge (considering he/she knows the answer).

(4) Quality; measure the success rate of each platform.

Because of the "black box" strategy that many platforms are using, it is not possible to deploy KPIs measuring the Gross Merchandise Value, the Net Revenue, the Margin and the Market Shares for instance.

Section 1: Selection of the competitors

The methodology to select the most appropriate companies to performed the comparison will be achieve by first listing all the potential candidates and then assess the adequacy based on several criterion.

(1) Geographic coverage: like InnoCentive, the platform should address challenges to solvers from the entire world and not restricted to a population from a particular area.

(2) Field of expertise: the nature of the challenges proposed should be related to the scientific domain.

(3) Education level of the solvers: in a certain way linked to the previous criterion, the solvers community should be mainly composed with academics or consultants with an important background.

(4) Prize money: the average award for a successful solution should be between $10 000 and $30 000.

(5) Challenge schedule: resolution time and frequency challenges

In the selection of the platform, all five criterions will have the same weight.

Section 2: Community

At First, a comparison of the community of solvers will be performed. This includes both the number of members but also the growth of this community. Indeed, if a platform is not able to grow its community of solver over time, or if they are not able to sustain a

certain level of teamwork and network effect, the management team might need to review its business model.

Of course the « fame » of a community itself cannot be compare to one another. Some group of solvers cannot be describe as more efficient or more reliable just because some renowned searcher have participated to a few challenges. In a same vein, the rate of success of a platform is subjective and for this reason, will not be appropriate for our analysis.

Section 3: The business model

In a third and final phase, the author will have a closer look at the activity on the selected platforms but more importantly to the business model and the value proposition for both the solvers and the seekers. What are the key elements that make the business model profitable, scalable and sustainable? Do the platforms have the same business model? Are they leveraging the same element?

This will be achieve by the analysis of the channels of communication, the brand positioning…

Chapter III: The market of the open Innovation platform

To close this analysis, the last chapter of this part is related to a general feeling and call into question the overall idea of Crowdsourcing and Open-Innovation. Has the power of the crowd been over estimated? Of course, the focus remains the open-innovation platform, which, for the last couple of years, has been at a stalemate. The first step will be to list the main actors, the main platforms for the different area.

Section 1: The In-house alternative

In the following section, the author begins by looking at the first alternative for companies to avoid Open-innovation platform: create your own platform in-house. The interview from different actual and potential partners of InnoCentive will provide the reasons of their choices and the understanding of their strategy and beliefs that we gained as a result of conducting them, through the use of brief quotations. The author have endeavoured to ensure that the quotes are representative in that they catch the sense of a number of interviews and the perspectives of a number of different managers. This method has been chosen as: « Interviews provide in-depth information pertaining to participants' experiences and viewpoints of a particular topic » (Turner III, 2010).

Interviews in Amsterdam at Heineken NV have been conducted with Bas van Vulgt, Head of Front End Innovation; at Solvay Campus Brussels with Thierry Collard, R&I external affairs manager for Europe and via Skype with F.Sallmann, Head of Innovation at GSK vaccines in Wavre. The respondents were told that we were doing a study on InnoCentive and its attractiveness to seekers, but no questions were sent before. The two first one .

Section 2: Kaggle example and Other OI platforms

Finally, to widen the scope of the analysis and have a large overview of the industry , a comparaison with Kaggle – another Open-Innovation platform speciallized in Artificial Intelligence –shall be performed. Because they have showed tromendous results the last few months, the benchmark analysis will enable to compare their business processes and best practices.

Part 3: Results

CHAPTER I : InnoCentive's innovative capacities

In 2001 Eli Lily was the first company to propose a platform open to everyone willing to participate in Open-innovation challenges. They had to convince the seeker companies to join the adventure, they had to attracted solvers and then the competition arises. In this context, the first chapter tackles the necessary capability of InnoCentive to be efficient: Is InnoCentive able to leverage the right resources to be competitive?

Section 1: Variables creating revenues

Because the subscription to InnoCentive is free of charge for the solvers, the four sources of incomes for the platform are (1) the fees paid by seekers, (2) the commission on the reward, (3) their consulting services and (4) their partnership with the Rockefeller Foundation or GlobalGiving for instance. Michelle Bishop (2009), consultant at Forrester Consulting ,highlighted the costs for a seeker company to post a challenge:

-Challenge posting fees

Those fees vary per customers and per challenge. In order to preserve the integrity of their client, InnoCentive sometimes need to divide the original problem into four different challenges, with an "average Challenge fee of $15.000 per Challenge".

-Successful Challenge fees

Here we consider the cost of the bounty a seeker should pay to the winning contestant, the average price being around $30.000 (Lakhani & Jeppesen, 2007).

Among all its services, InnoCentive charge an additional $6 500 fees per challenge, for the transfer of the IP rights they undertake on behalf of the challenger.

-InnoCentive Challenges Startup Consulting and Training Services

It surely takes some times to change a company's R&D strategy and InnoCentive quickly understood that. As mentioned earlier, the organization has a SaaS-based program with a traineeship for the new seekers. Giving advice in innovation management, preparing marketing or a business plan, the average price for the optional service would be $50.000, according to Forrester.

In addition, the seeker will internally face two other costs that are the following:

-Internal labor costs

With or without the consulting services of the organization, a company posting a challenge will spend a fair amount of time trying, at first to formulate the problem and then to assess every answers. Intuitively, a difficult challenge will take more time to prepare but fewer answers will be submitted, while a small challenge will be formulate rapidly but the internal R&D service will have to go through many more answers.

-Administrative costs

Finally, another indirect cost for the seeker is related to internal efforts to maintain a relationship with InnoCentive. Not only while the challenge is running, but also after it.

As for the partnership with the Rockefeller foundation announced in 2006 and renewed in 2009, InnoCentive does not receive extra credit but instead of being paid by the NPO proposing the challenge, the foundation bears all the fees if they are related to a problem solving in a third-world country.

Starting from these costs, the author will be able to speculate on the revenue model of InnoCentive. Out of the five costs the consulting group has been able to identify, two of them represent an income stream for InnoCentive:

1) Fee for InnoCentive starting pack (consulting and training) equals to $50.000

2) Fees paid for successful challenge (IP transfer) equals to $6.500

Assumptions:

(1) The first assumption is that a seeker company will only pay for the starting pack once a year, even if that same company proposed ten different challenges the same year. That being said, the author consider that for 1/5 of the challenges proposed every year, a starting pack as already been paid once and the seeker company doesn't need a second training.

(2) It will also be assumed that InnoCentive upload 11 new challenges each month. This average number is confirmed both by our database and the figures claimed by the platform.

(3) The success rate of the platform is about 40% for the regular challenges and 60% for the non-profit challenges, said CEO Dwayne Spradlin. The non-profit challenges represent about 20% of InnoCentive portfolio. Only for those 40% and 60%, the IP will be transferred.

(4) The platform employs 54 people (according to LinkedIn and CrunchBase between 51 and 100)

Calculation:

Starting pack each year:

$R_1 = \text{F. N. 12. } \eta$ where F_1 : fees

N : average number of challenges per month

η : proportion of seekers using the starting pack

$R_1 = 50\,000 \text{ x } 11 \text{x } 12 \text{ x } 4/5$ = **$5.280.000**

Successful Challenges

$R_2 = F_2 \text{ . N . } 12 \text{ . (} \nu \text{ . s + (1- } \nu \text{) . S)}$

Where F_2 = fees

N = average number of challenges per month

ν = proportion of non-profit challenges

s = success rate for non profit

S = success rate for regular challenges

$R_2 = 6500 \text{ x } 11 \text{ x } 12 \text{ x } (0{,}2 \text{ x } 0{,}6 + (1\text{-}0{,}2) \text{ x } 0{,}4) =$ **$377.520**

Total revenue per year = $R_1 + R_2$

= $5.280.000 + $377.520 = **$5.657.520**

This represents $105.000 per employee and per year.

As a comparison, Deloitte has announced for the fiscal year 2016, a revenue per employee of $150.573[3] and KPMG it is $134.510[4].

The reader should be aware of the following:

(1) This doesn't take into account the four different kinds of challenges (different by their range of solution requirement and therefore the cost of the IP rights).

(1) The other income stream for the platform is InnoCentive@Work, a collaborative SaaS-based open innovation platform for running internally-focused programs that engage diverse communities such as the employees, partners, or customers. Launched in 2008, the SaaS has already proposed 3000 internal-challenges

[3] "2016 Global Report - Deloitte - Global Reports, insights, services, and solutions". Retrieved July 14th 2017

[4] "2016 KPMG International Annual Review" . Retrieved July 14th 2017

But are these $5,6 million revenue enough for the company ? Again, by doing some simple math and quick assumptions, the cost structure of the platform can be estimated:

(1) InnoCentive has two offices; the Head-Quarter in Waltham (Massachusetts) and the other one in London. The overhead costs - including the recurring expenses such as the rent, a secretary, phone bills, postage, benefits, insurance, equipment and maintenance of the marketplace – are estimated to $400.000 a year.

(2) The average annual wage of the consultants, programmers, accountant, etc. is estimated at $85.000 per person.

Total cost: 400.000 + 85.000 x 54 = **$4.990.000**

These calculations are done rather rapidly, however they provide a good overview of the companies' cost structure With an estimated annual revenue of $5.657.520 and an annual cost of $4.990.000, this leaves to the company a small margin of 10% while the average in this industry is rather between 15% and 25%.

To go even further in the reflexion, this means for InnoCentive that they have to run at least 117 challenges a year.

A reliable network

The process we used to collect the data is very simple and quick but it shows some limits. Indeed, the dataset doesn't show a continuity as WayBack Machine takes some screenshots on a random basis, sometimes five in a months, sometimes none in ninety days. Therefore we cannot assess InnoCentive challenge center overtime however it would have been very interesting. What is the frequency regarding the uploaded challenges in 2017? And what was it back in 2012 or at the beginning in 2001? This clearly would have shown the impact and the growth (or not) of the platform.

Many seekers companies prefer to remain anonymous so that their competitors will not be aware of their innovation strategy, but for those who don't, we can notice a relevant and loyal network. Out of the 187 challenges collected, 37 are not anonymous (20%). Enel has uploaded 5 challenges in two year, AstraZenca 7 in three years and during the

interview at Solvay that the Belgian chemical company had proposed more than 10 challenges.

The variables affecting a company innovative capabities are the culture, the resources, the competencies and the network. It has been highlighted here that InnoCentive has both the resources to create an effective business model where they can generate earnings for the challenge propositions and have built a reliable network of suppliers (i.e. the seekers). This last point is the biggest obstacle for crowdsourcing platform: being able to host enough challenges to sustain the platform over time and not crafting a challenge. So what is the strategy of the platform to host enough challenges? Would it be more interesting to focus on one specific niche or try to reach many different areas? What is the added value for the customers? Is InnoCentive able to answer the needs of its clients, by reducing the risks or the investments as the literature suggested?

Section 2: Variables creating value

There is a point that will not be developed in this thesis but could have deserved a special attention: the Interlectual Property transfer. Because it has been explained in deept by Isabelle Liotard (Transferts de connaissances sur internet et innovation: le rôle de nouveaux intermédiaires) and because it falls into the legal field, the author decided not to cover this topic. Nevertheless, the Challenge Specific Agreement is listed in the appendices so the reader can make his mind on how InnoCentive deals with it. Beyond any doubts, this agreement adds a lot of value for both types of customers.

InnoCentive was an initiative of Alpheus Bingham and Aaron Schacht, both working by that time for Eli Lilly &co., the American pharmaceutical company, explaining the popularity of the challenges tagged in the discipline of chemistry (50%), physique (48%), engineering (60%) or life science (47%)[5]. In counterpart, the challenges in mathematics (9%) or business (20%) represent a minority as their fall in the field of

[5] Average calculated on the basis of the appendix 9

other platform such as Kaggle for data-mining or TopCoder for softwares, which claims to have respectively 600 000 and 1 000 000 registered solvers.

So why would InnoCentive propose those kind of challenges? Why do they choose to go on another field? Probably because the offer in terms of solver is there. Those challenges in IT or mathematics attracted more solvers than the other disciplines.

Scientific Area	Engineering/ design	Physical Sciences	Business & Entrepreneurship	Chemistry	Computer/IT	Food/Agriculture	Life sciences	Math/Statistiques	Request for Partners	Social innovation
Number of Solvers (in average)	194	184	198	152	220	167	171	247	150	219
Number of Challenges	104	91	33	95	52	27	86	17	47	16

Table 3-1 : Number of challenges and solvers per discipline

In partnership with the Rockefeller foundation (and others NPO), InnoCentive has clearly shown its intension of reaching a more open market of idea. By the end of 2008, « Non-profit challenges have grown to about 20 percent of the InnoCentive portfolio » said Dwayne Spradlin[6]. The solvers perhaps don't have the fundings to help such a cause, but they have the know-how. Most of the time they work during their holidays or spare time and if fun and money are two main motivations, their willingness to work in an elite group of solvers that are making a difference has a significant impact (Lakhani and Jeppesen, 2003).

[6] https://www.fastcompany.com/1116159/crowdsourcing-innovation-qa-dwayne-spradlin-innocentive

InnoCentive succeeded then to tick the third box from Neely and Hii's study (1999): the culture. But in sixteen years, thanks to its corporate image and culture, has InnoCentive been able to attract more solvers?

The number of solvers

First of all, there is an important clarification to make regarding to the number of solvers. As we know, the quality and the size of the community is the biggest strength and asset of InnoCentive and the company claims to have network of 380 000+ solvers (source website InnoCentive). In this case, the figure represents the number of solvers who have shown their interest for the specific challenge.

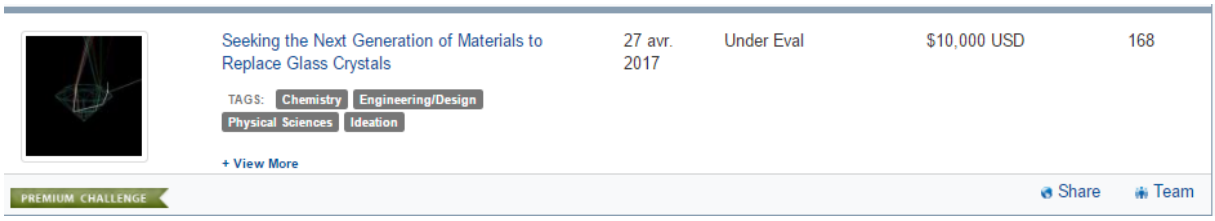

Figure 3-1 : InnoCentive's challenge presentation

For instance, for this challenge, 168 solvers have registered to have more details on the expectations of the seeker, some additional inputs, but furthermore, he/she will accept the Challenge Specific Agreement -available on Innocentive's website- which regulates the disclosure, the assessment of the solutions, the IP transfer, the payment, etc. (Appendix 3)

Looking at the entire database, we notice a slight evolution of the average of solvers by challenges, represented by the red line and being close to 200. Lakhani already confirmed that « as the number of unique scientific interests in the overall submitter population increased, the higher the probability that a Challenge was successfully solved».

The issue seems then to be deeper than expected. Not only InnoCentive is unable to grow its community of solvers, but the number of challenges proposed hasn't skyrocketed either.

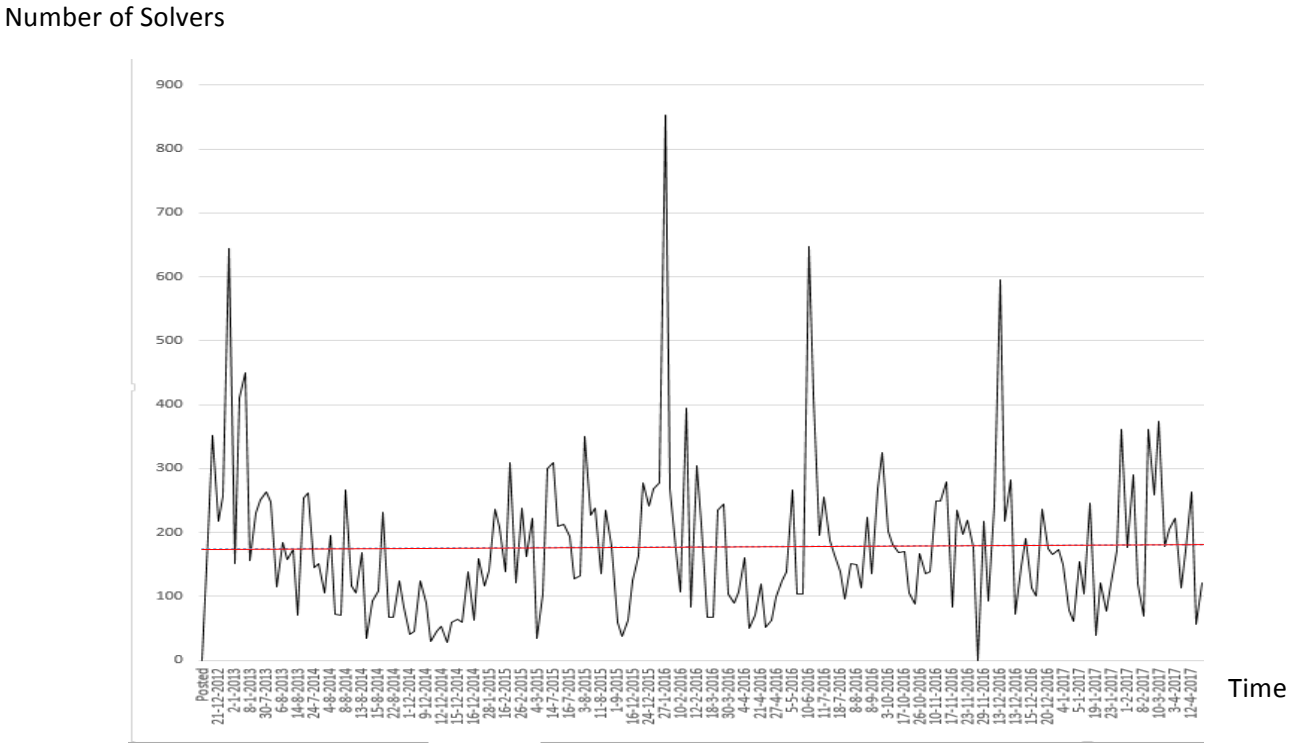

Figure 3-2 : Evolution of the number of solvers per challenge between 2013 and 2017

The management team

Glassdoor is a platform founded in 2007 that "collects company reviews and real salaries from employees of large companies and displays them anonymously for all members to see," according to TechCrunch[7]. Today, medium and large company cannot afford to ignore Glassdoor reviews, despite the differences of opinion on the subject. The fact remains, however, that out of the ten reviews eight of them have a negative perspective of the company and five of them disapprove the CEO. What clearly appears from these reviews is that the employees always worked for InnoCentive because they like the concept to work on interesting project on cutting edge innovation or on charity with the foundations. But on the other side, the lack of strategy form the top management is clearly criticized. It is hard for the employee to follow the line as the company do not have a clear focus and spread on too many different areas for a company of fifty-four employees. Indeed, the platform tried to deviate from the initial roadmap which is

[7] https://www.crunchbase.com/organization/glassdoor#/entity

chemistry and life-science, propose a few challenges in artificial intelligence and mathematics where Kaggle is by far leading the area.

« Why do innovation contest organizers typically invite and encourage widespread entry? Most economic models of tournaments suggest that widespread entry should diminish contest performance by reducing incentives to exert effort for all competitors ». This explanation of the cross-side effect by Boudreau, Lacetera and Lakhani (2011) goes in the same direction.

Section 3: Recommendations

Now that the first part of our analysis has been completed to answer whether InnoCentive was able to leverage the right variables to be competitive, several points seems to be missing in the firm's strategy.

Sales & Marketing presence

The core purpose of this thesis is not focused on the evaluation of the digital marketing plan of InnoCentive but a few aspects can be displayed, especially if all its activity is done on the internet. We have already noted the partnership with some universities and foundations that surely gives InnoCentive a positive image. If it is easy to find the collaboration with Lumina, Rockefeller, Eli Lilly or the Royal Society of Chemistry on InnoCentive's website, the opposite is almost impossible; the platform didn't succeed to leverage the visibility, the reach and the breadth of their partners.

Hereafter we briefly collected some basics data from InnoCentive social networks in order to scale their integration into the e-business framework formed by social media and social networks.

Communication Channel	Solvers	Facebook	Twitter	Google+	Youtube	LinkedIn
Membership * in 12 /2016	380.000[8]	12.400 (12.057)*	10.700 (10.400)*	95	325	4.413
Publications	NA	NA	4.291 (120 in 2017) 3 re-tweets	NA	21 videos (last one from 2013)	194

Table 3-2 : InnoCentive's social media activity

Information collected on July 8th 2017

To understand their e-business or e-marketing strategy, we first had to understand their purpose. After a rapid visit on the several platforms, it is obvious that those social media are just a way of mirroring their own website. There are no posts about their partners, there are no polls, no new contents, so what would this add to the consumer (in this case either the seeker or the solver)? In 2017, on the Facebook page of InnoCentive, there are only two posts that don't present a challenge refering to InnoCentive's website and it is the same on Twitter except for three tweets they shared. But are the solvers really active on these social media? Maybe not, but the new generation of young doctoral student probably is.

Finally, we can also mention the three articles on InnoCentive's website, from Forbes, the Guardian and Bloomberg BusinessWeek, all previous to 2013. This demographic analysis of actual and potential customers doesn't reflect the financial situation of the firm but they let us think that the platform is running out of idea for a couple of years.

HR opportunities

The ambition of InnoCentive is to facilitate the links between the two groups of users and they are doing so via the variables we explained earlier. But it seems that once the IP and the award have been transferred, the platform stops to collaborate. Initiated by a few winning solvers, the website « We Are Solvers » publicly advice the management of InnoCentive that there is a gap on this matter. On one hand, many companies think that an Open Innovation campaign is difficult to implement due to the NIH syndrome[9] (Not Invented Here) and on the other hand, many solvers would be happy to help as a part or

[8] according to their Website
[9] See F.Sallmann appendix 7

full time consultant for the client seeker. It is very uncommon that a solver is involved in a further process and this is a lost for both sides.

This high concentration of talented brains and experimented searcher represent a big opportunity for headhunters. In order to empower and develop its solver community, InnoCentive could think of a partnership with a renowned executive recruitment firm such as Stanton Chase or Roppela. Those companies probably already know the processes but a first contact could be engaged via InnoCentive. This will be a nice showcase for the platform and will attract new solvers as they desire and deserve more recognition. This will also keep the fire burning for those who already « play » with the platform. Kaggle, the open innovation platform specialized in data-mining has its own jobs board made for both the companies which are looking for a data scientist and the solvers as many job propositions are presented. In less than two weeks, an attractive post can attract or interest more that 1.500 people[10].

This last opportunity means for InnoCentive to enter a complementary market. Gawer and Henderson (2007) covered this topic with a focus on Intel. There are of course several well-know reasons not to do so. Assuming that InnoCentive acts as a monopolist, we selected three of them:

(1) the platform is already be fully competitive

(2) the impact on the demand user is too small

(3) entry is more effort than it worth

None of those reasons mentioned here above seem to be reasonable justifications so perhaps InnoCentive just does't have the HR capabilities to propose such a service, but the management should stay tuned for its valuable solver community.

Team working

InnoCentive may be a digital tool, a certain equilibrium with the reality needs to be found. The platform need to creat more interaction between the solvers themselves, by facilitating conferences or seminars,… The more digital it is, the more reality is needed

[10] https://www.kaggle.com/jobs

to find this equilibrium. It is the same thing with music: everythin is digital, there are no more CDs, but the need for festivals and live concerts is higher than before.

The analyses performed in this chapter has demonstrate that InnoCentive has been able to leverage the right variables in order to remain innovative and therefore competitive. Nevertheless, the platform seems to rely both on its reputation and on its past, instead of investing to expand its capacity and its network. As a pioneer in the industry, they had to take risks in order to establish their leadership position but the start-up world is tough as their competitor are emerging from all sides. So has InnoCentive created barriers to entry or are they enjoying a first mover advantage?

CHAPTER II: InnoCentive's competition

In this chapter, the author would like to determined whether InnoCentive is able to outperform its competitors or not, based the previous analysis and the comparison of their business model, strategy, strength and weaknesses,…

Selection of the competitors

The appendix 1 contains many of the Open Innovation platforms similar to InnoCentive. First, we shall identify five of the closest competitors and then, based on the methodology presented earlier, select the two most appropriate platforms to perform the comparative analysis. Those five companies are presented hereafter, based on our preliminary researches:

Adequacy of the competitors to perform the comparative analysis					
Platforms	***Geographic coverage***	***Field of expertise***	***Education level of the solvers***	***Prize money***	***Challenge schedule***
HeroX	+	+	+	+	+
IdeaConnection	+	+	+	+	+
Ideaken	+	+	+	-	-
InnoGet	+	+	+	-	-
MindSumo	+	-	-	-	+
NineSigma	+	+	+	+	-

Table 3-3 : Selection of the competitors

HeroX and IdeaConnection appear to be the two most appropriate platforms regarding the selection for the comparative analysis as they fulfill all the criteria.

HeroX: Launched in 2013, HeroX exists to enable anyone, anywhere in the world, to create a challenge that addresses any problem or opportunity, build a community around that challenge and activate the circumstances that can lead to a breakthrough innovation. It is the result of a spin-off of the partnership between XPRIZE and City Light Capital to envision a platform that would make the power of incentive challenges available to anyone[11].

IdeaConnection has been solving problems since 2007 by assembling multidisciplinary teams lead by world-class facilitators, who develop intensely researched, innovative, and in-depth solutions. Using this approach, IdeaConnection has achieved a best-in-class solve rate for problems ranging from food science, chemistry, engineering, biology, game theory, crop science, packaging, big data, consumer products and much more. (Source IdeaConnection)

Section 1: Challenge Proposition

HeroX

At first sight, HeroX portal is pretty similar to InnoCentive. From a solver point of view, it is as easy to find the relevant information needed to start a challenge: who proposes the challenge, when is the due date, what is the award, how many people are interested in it… One thing InnoCentive highlighted and HeroX doesn't though, is the discipline. Most of the time, the title of the challenge is not explicit enough to enable the potential solver to understand the domain of expertise of the challenge. As we know, at InnoCentive, the solver will easily find the type of challenge he/she is dealing with (to recall, ideation, theoretical, RTP or eRFP), thanks to the many « TAGS » attached to each challenge.

[11] https://herox.com/our-story

Overall, this platform seems to be much more solver-oriented. There is no homepage on the website, we immediately jump into the challenges, while InnoCentive have first a homepage, then two separate pages for the solvers and the seekers.

IdeaConnection

This platform respected all the criteria to be selected; the concept is a bit different though. IdeaConnection also has its open-Innovation challenges which are publicly available. But the latter represents only a small minority of the challenges. Most of IdeaConnection's challenges are confidential. To receive invitations to confidential challenges, one must sign-up as a problem solver. But the solvers are not able to choose which challenge they will be assigned to. Indeed, you first need to register and describe your profile very accurately, with the more details you can. By sharing your education, your previous experience,… IdeaConnection will be able to assign you to a team of expert and match you with a specific problem. The work of IdeaConenction is therefore much more complicated and the seeker fully places its trust in the management team of the platform.

If InnoCentive's strategy is to push the challenges to the solvers, in this case with IdeaConnection, the solvers are pushed to the challenges that fit their expertise and their hobbies. Because Teamwork will always be involved, the work is much more constrained; if the challenge is accepted by the solver, he has to « attend at least one 1-hour online meeting every week for a 12 week period » and « must be committed to contribute whatever it takes to come up with a solution ».

Press Coverage

When reporting the press coverage of the three platforms, the same conclusions can be drawn; InnoCentive keeps its reputation of being the pioneer in crowdsourcing platform but HeroX takes more and more space every year, while IdeaConnection is almost inexistent.

The numbers of articles collected by CrunchBase, the database of the American publisher of technology industry news, are stated in the table below:

	InnoCentive	IdeaConnection	HeroX
2015	13	2	8
2016	2	0	6

Table 3-4 : Press coverage of the three platforms

Nevertheless, the situation is a bit different for the Search Engine Optimization (SEO). Surprisingly, when typing « open innovation challenge » in Google, IdeaConnection is the first of the three platforms to appear, as a 6th proposition. InnoCentive is the 8th (both are on the first page), while HeroX is not even in Google tenth first pages.

For the request « Crowdsourcing challenge », InnoCentive and IdeaConnection are indicated on the 1st and 2nd proposition and HeroX only appears at the third page of research.

Section 2: The Community

Social media

If there is one common feature between those three platforms, it is the way they count their solver community: everyone who has subscribed to the platform and receives the newsletter, even if he/she will never upload any solution, is considered as a solver and member of the community. As we did in the previous chapter for InnoCentive, we shall compare the presence of the three competitors on the social media.

	Communication Channels	Solvers	Facebook	Twitter	Google+	Youtube	LinkedIn
InnoCenti	Membership * in 12 /2016	380.000	12.400 (12.057)*	10.700 (10.400)*	95	325	4.413
	Publications	NA	NA	4.291 (120 in 2017) 3 re-tweets	NA	21 videos (last one from 2013)	194
HeroX	Membership	NA	1.003.929	119.000	209	NA	538
	Publications	NA	NA	5.558 (95.400 subscriptions)	NA	23 (last one from 07.13.2017)	500
IdeaConnection	Membership	41.000	2.374	10.900	190	NA	1.700
	Publications	NA	NA	1.845 (6.429 subscriptions)	NA	6 (last one from 2013)	0

Table 3-5 : Compar social media activity

Information collected on july 13th

Despite its younger age, HeroX is by far the most represented platform of the social media, and especially with their impressive Facebook community with more than 1.000.000 followers. The reason of their success is that they achieve to add value not only to the solvers or the seekers, but they also bring on board new « Heroes ». By posting on their page twice a day on average, they increase their visibility and brand recognition. Unlike InnoCentive, only for half of their publications, they are mirroring their website, every video, every article related to crowdsourcing or open-innovation can be uploaded on their Facebook page. This is how one can increase its Share-Of-Voice, by posting delighting and helpful content. Delighted customers will like, comment or share the content, which will reach other customers and do the marketing for the platform.

KPIs Summary

	InnoCentive	HeroX	IdeaConnection
Visibility	Medium	High	Low
Availability	Medium	Medium	Low
Activation	High	High	Low
Quality	Medium	Medium	High

Table 3-6 : KPIs summary

The issue with this KPI measurement is that it shouldn't be static. The measurement system should evolve with the activity and monitor the progress of the platform. Nevertheless, these key drivers identify the hot spots that need attention.

Section 3: Strategic Opportunities

Revenue Model

The three platforms might be different; they all use the same business model: the subscription is free of charge for the solvers and the seekers pay a fee per challenge. If one of them decided that the solvers should pay a part of the fees, this platform will automatically lose its whole community. Building a strong and loyal community is the most important as we have seen with the Google example (they first made sure Google was in a dominant position to start the advertising). A few open-innovation platform instead of using a punctual fee for the seeker, prefer to charge a membership fee. This is the model used by ClickWorker. The big difference with InnoCentive: the tasks or « challenges » asked are very simple and accessible; no need to have a PhD in bio-mechanics. In this regards, the seekers company will use it all the time for the small work they want to outsource, for instance to translate their website in Dutch. Since InnoCentive is more of an exceptional (in terms of frequency for the seeker) problem solving platform, this kind of model does seem to fit the system.

Feedback and non-winning solutions

A key motivation for a solver to compete on a crowdsourcing platform is to learn from his peers. HeroX and IdeaConnection really understand this need from the users and both created a section for team working. Sometimes, a solver has no idea where to start and where this work will lead. This is where these virtual teams are interesting; they bring on board more experts from different areas, different industries.

The other feature where InnoCentive is trailing is the after-challenge period. The lack of recruitment process has already been highlighted but some solvers do not seems to care about this issue. Whether they are in the Top 10 solvers is not important – despite many of them remaining anonymous- but what they do care about is learning about the challenge they have competed for. On one hand, an individual feedback is obviously too difficult and expensive for the seeker to ensure a good quality assessment but on the other hand, the company will not reveal the winning solution for which they paid the IP transfer. Anyhow, a trade-off can be found as they could give the guideline to solve the problem. Again, Kaggle found a way to meet the need with Kernels, where solvers can answer questions and give feedback to one another. This pretty much sums up what InnoCentive's solvers have done on their own with the Facebook and LinkedIn Solver group.

Finally, the question of the non-winning solution should be raised: what can be done with this work? Those of which are not rewarded are just left aside and nobody can do anything with it. If they are not relevant for this specific challenge, they can be from time to time, adapted to a similar situation but in another market, another country or industry. By definition, InnoCentive is a « market for idea »; they could also become a market for patent with the non-winning solutions.

CHAPTER III: The market of the open Innovation platform

One will probably start its analysis with this chapter, to have a general overview of the market and then focus on one specific type of business. In this case, this is the analysis of InnoCentive and its competitors that underlines the weakness of the niche market and

let the author came with the following assumption: Has the power of the crowd been over estimated? The feeling is shared by many people in the industry. Georgia Mihalcea, a business strategist who won three challenges for InnoCentive, uploaded more than thirty solutions and is the co-founder of the blog « WeAreSolver » said that : « In 7 years since I play the game of crowdsourcing, nothing really changed in terms of impact and approach of Open Innovation platforms and seekers »[12], despite the rise and the ubiquity of the Internet. Simon Schneider, the CEO of Zyncd and UK Director of ECSI Consulting and former employee at OmniCompete which was acquired by InnoCentive, argued the same in its interview with Venturebeat[13].

In this chapter, the spotlight will be to explain why the initial expectations of the pioneer in Open Innovation were too optimistic and why a few key assumptions haven't come true.

Section 1: The In-house substitution

This is for sure the biggest treat for the Open Innovation platforms; the industry has learned to do it on their own, in-house and the interview with F.Sallmann from GSK confirms this trend. « This is a great initiative, no doubt about that, but if a company with 100.000 employees is not able to find some ideas or the solution in-house, we need to think our working system over » (Appendix 7). Not only the big pharmaceutical companies learned to do it in-house; every industry did. The head of innovation of a large supermarket chain revealed[14]:

"Initially we ran competitions with Kaggle, but now we are crowdsourcing ourselves as we'd rather own and curate our own solver-crowd after we learned how to do it"

[12] https://wearesolvers.com/2016/12/07/scanning-open-innovation-marketplace-innocentive/ Retrieved on July 2nd 2017.
[13] https://venturebeat.com/2017/03/15/what-the-kaggle-acquisition-by-google-means-for-crowdsourcing/ Retrieved July 14th 2017.
[7] https://venturebeat.com/2017/03/15/what-the-kaggle-acquisition-by-google-means-for-crowdsourcing/ Retrieved July 14th 2017.

In fact every company with a reliable and trustful community would be able to do it. In a previous section, the case of LEGO has been highlighted but this can also be applied to the film industry, besides Netflix has already done it[15]. In 2009, when InnoCentive were about to launch the InnoCentive@Work, Dwayne Spradlin said: « Companies often don't know how much they already know ». Eight years later it appears they do know and have learned how to leverage this knowledge.

A few issues have already been brought forward such as the Not-Invented-Here syndrome reminded by the F. Sallmann. It is difficult to define a problem, a challenge for which the solution will be aligned with the corporate strategy and therefore accepted internally. Hackaton is another kind of Open Innovation platform specialized in prototypes. GSK France had an experience with this platform, however the final result was that they just received many ideas but didn't really know what to do with them. So they just « left the ideas in a drawer » and never went further, there is a break in the process but above all there is no eco-system.
For Solvay, the situation is slightly different: they used to propose a few challenges on InnoCentive – ten over the last eight years – but this never represented a real breakthrough for the company. In fact, this was the initiative of one of the Innovation Manager for Solvay Brussels, but as he left two years ago, nobody took the lead of the project and Solvay stopped working with Open-Innovation platforms. This clearly shows up that crowdsourcing is not really in the agenda of the majority of the companies. A few challenges are ran here and there by some big industry players, but crowdsourcing never had any small impact on R&D. Thierry Collard reported:

« We want to work on the long run and create some real collaboration with the other business actors rather than just doing some one-shot innovation with InnoCentive […] as for the big innovations projects we are running, some are too confidential to even think of a collaboration. Use InnoCentive for those projects is not an option ». (Appendix 8)

This reality is sometimes harsh to believe especially when we look at the potential the Open Innovation platforms had back in 2011 : InnoCentive just raised its last funding round for $7,5 millions, and Kaggle raised an amazing $11 million Series A round led by Index and Koshla Ventures. « There was true excitement in the air that traditional R&D

[15] https://www.wired.com/2009/09/how-the-netflix-prize-was-won/ Retrieved July 14th 2017.

was over and a new era of open R&D was on its way with Kaggle, InnoCentive, Quirky, and TopCoder leading the way » Simon Schneider [16]said.

But with the success of those pioneers, there has been a big growth of scattered offering: « Since 2011 we've seen a plethora of new players offering services similar to InnoCentive and Kaggle. Consulting firms and PR agencies have also gotten into the mix, using their industry niche expertise to win clients against the bigger platforms »

Section 2: The Kaggle example

Founded in 2010 by Anthony Goldbloom and Ben Hammer, Kaggle is an Open Innovation platform that host challenges in data science and machine learning. Event though the competitors were important at the early stages of crowdsourcing, Kaggle has been able to take advantage over some well implemented platforms such as DrivenData, TopCoder or HackerRank, by focusing on its specific niche.

The core system of Kaggle is exactly the same as InnoCentive ; the seeker company is looking for a new way to improve its processes and the solvers for « glory, fortune and fun ». With its quick success, the platform was able to raise $16 million in two rounds (2011 and 2015) according to CrunchBase – which is to recall, half the amount InnoCentive has raised. Nevertheless, in March 2017, Google confirmed the acquisition of the data science platform, with which Google had a bit of history as Kaggle teamed up to host a $100.000 machine learning competition for classifying YouTube's video a few months earlier. By 2016, Kaggle had an active community of about 500.000 members. One year later, the CEO shared some statistics on the blog of the platform as they reached 1.000.000 users[17]. An exponential growth that Anthony Goldbloom explained by some meaningful milestones over the years. Five major challenges are highlighted but most of all, the launch of Kaggle Kernels, a place where users can upload their work, share their results and receive feedbacks. In two years, Kernels has had more than 250.000 posts, which really shows the willingness of solvers to share with each other as one fourth of the community is doing it.

[16] Simon Schneider for venturebeat

[17] http://blog.kaggle.com/2017/06/06/weve-passed-1-million-members/

To summarize, what can be learned from Kaggle and reapplied to InnoCentive? First they need to run a couple of important challenges every year. A high prized challenge proposed by a well known company or foundation with a social purpose, a meaningful challenge for which solvers think they will be mobilized and work for the greater good. These big challenges represent a great marketing campaign for the platform, bring on board new solvers and grow the platform press coverage in the mainstream newspapers.

Regarding this Kaggle example, would it be possible for InnoCentive to be buyout by one of the largest pharmaceutical or chemical company such as Roche, Johnson & Johnson or BASF?

The key success factor of the Kaggle acquisition by Google was to combine the world biggest and most active community with the most powerful machine learning cloud. Some say that Google might not be that much interested by the crowd-to-rent system of Kaggle but rather by « owning the crowd itself and the active community, from which Google can do some critical recruiting. » (Simon Schneider). From that sight, the situation is much more difficult to apply to the solver community of InnoCentive as they need a lab and some materials to work; not just a screen, a dataset and a strong hardware.

Conclusion

Contributions

After having taken a closer look at the complex economics inherent the Open-Innovation platforms, this dissertation came to the conclusion that over the last seven years, the number of platforms has skyrocketed. In its own way, almost every industry uses the crowd to innovate, to discover new needs and to answer burning issues.

From this research it can be confirmed that the majority of companies is already aware of the power of the crowd. However there is only a few of them ready to take the risk as the fear for disclosure or lake of strategic alignment -the « not invented here » syndrom- seems important for them, even today, after all the positive evaluations underlying economics benefits of Open-Innovation and crowdsourcing.

Fifteen years from now, InnoCentive drew a business model suited for a two-sided market and attractive both for the expert solvers and for the seeker companies. Moreover, they are able to generate income from their activities. But they couldn't manage to establish strong barriers to entry, leaving all competitors able to copy their business model. Kaggle, HeroX, a few of them were named who took InnoCentive's market shares.

Two main distinctive features of InnoCentive tend to attract customers. The first one appeared to be the solide personnal accompaniment before uploading the challenge, in order to understand the needs, shape the question and define the evaluation grid. Since many companies try to have their own Open-Innovation platform, this assets is for InnoCentive the best they can acheived to be innovative and attractive. The second main distinctive feature is their accessibility for the solvers. Everyone is welcome to submit a proposition and all the challenges are available, regardless of the area or the level of expertise of the contestant. This contrasts with IdeaConnection, who claims to insure a better succes rate, though.

Is InnoCentive still the first Open-Innovation platfrom? The answer is clearly no. Kaggle has out-performed all the competitors the last couple of year, by building a reliable community of solvers, driven by the desire to learn and to compare themselves to each other. But Kaggle has its own niche and the acquisition by Google confirms they won't define a divergente path from the artificial intelligence and information technology. For its own specializations, which are chemistry, physics and life science, InnoCentive is battling side by side with HeroX but tend to remain in first position. InnoCentive, the pioneer, porposes more challenges, is more consistent and probably more reliable for a seeker company but for how long? Its young competitor has already some strong partner on its side, with the NASA and the Coca Cola company.

If HeroX manage to bring on board other big companies in the technology industry and properly define their niche, they will quickly overtake InnoCentive as they fully understanded the needs of the solver communtiy : « being hungry to learn, grow and have fun ». Indeed, the platform is designed in a way that covers demand for both the solvers and themselves, using the right digital marketing tools. So far, many freelancers or SMEs have found with HeroX a good way to develop their innovation. The big company will just add notoriety to the young platform.

Recommandations

It has been clear from this work that InnoCentive does not properly answer the needs of its solvers, who are the corner stone of the business model. Coming from a company specialized in innovation, it is questionnable that they haven't made any important changes the lasts five years. The small businesses are the engine of the economy. Their first initiative to seduce these entrepreuneurs doesn't seems to be a success, the management team should keep looking in this direction. InnoCentive, as well as the other platforms, will only grow if the Open-Innovation and the crowdsourcing reaches mass population. By investigating in some local and regional initiatives and problem solving, with the help of governments. There is plenty of work that needs to be done to solve the traffic jam in western Europe or water saving in Asia. Greenwashing or corporate responsability ? The high rewarded challenges with a social purpose are known to attract a lot of solvers.

A few recommandations have already developped earlier regarding the post-challenge phase and the human ressources posibilities that the platform can offer. LinkedIn is the biggest online headhunter and InnoCentive should build a closer relation with the recruiters. Also, a stronggest presence on the social media is essential for them. Not only to attract more solvers, but to inform everyone on the latest technology or about crowdsourcing examples. Last but not least, InnoCentive should rate their solvers. For now, they only classify the best « Top Solvers », those who have won several challenges this year. But the others are forgotten. People wants recognition and there are other alternative than the feedbacks. If there is a ranking for every challenges, the solvers can estimated the rightness of their work and see their evolution overtime.

Most of the time, these advices are just ideas took from other crowdsourcing platforms. Nothing really innovative and revolutionary. InnoCentive just has to make a bit of benchmarking, to assess what has been done by the other and reapply if needed.

Limits of the paper and eventual continuations:

This article is expected to provide suggestions to managers from InnoCentive on paying attention of the opportunities and what aspects should be improved upon in order to produce more value to their customers. What it does not aim to provide is the understanding of the Intellectual Property transfer, which is a major subject for the smooth functioning of the platform. The Arrow information paradox and the paper from Isabelle Liotard (2012) will help the reader to understand the matter. Furthermore, the part of the company working on the SAAS with InnoCentive@Work has really been developed, especially when computing the rentability of the platform, because there is no information available online. An analysis with the collaboration of InnoCentive would be interesting for that matter.

Nonetheless, an in-depth research on the award calculation would be interesting in order to understand the strategic issues behind these platforms. How is it set? Is there a correlation between the allocated time or the scientific area and the price? InnoCentive must have a historic with all the challenges and the related award to help them set the price

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Appendices

Appendix 1 – Different kinds of Open-Innovation platforms

Source : Board of Innovation, n.d.

INTERMEDIARY PLATFORMS		
Research & Development platforms	Innocentive	open innovation problem solving
	IdeaConnection	idea marketplace and problem solving
	Yet2.com	IP market place
	PRESANS (beta)	connect and solve R&D problems
	Hypios	online problem solving
	Innoget	research intermediary platform
	One Billion Minds	online (social) challenges
	NineSigma	technology problem solving
	Ideaken	collaborative crowdsourcing
	Innovation-community.de	Community of innovators & creators.
Marketing, Design & Idea platforms	CMNTY Corporation	community co-creation
	Innovation Exchange	open innovation market place
	Guerra Creativa	crowdsourcing anything creative
	Brand Tags	tagging brands
	Battle of concepts	student challenges
	crowdSPRING	creative designs
	12designer	marketplace for creative solutions
	LeadVine	crowdsourcing lead generation
	99designs	pioneer in design crowdsourcing
	Edge Amsterdam	elite sourcing platform
	OpenIDEO	collaborative design platform
	Challenge.gov	crowdsourcing for government problems
	eYeka	the co-creation community
	Spigit	social innovation platform
	Zooppa	Branding/marketing platform
	HeroX	social, economic, and strategic
Collective Intelligence Prediction	**Lumenogic**	collective intelligence markets
	Ushahidi	crowdsourcing crisis information
	Kaggle	data mining and forecasting
	We Are Hunted	the online music chart
	Google Image Labeler	crowdsourced image labeling
HR	**TopCoder**	competition-based software crowdsourcing
	Spudaroo	crowdsourcing copywriting
	Clickworker	small online task solving
	Amazon Mechanical Turk	low-cost crowdsourcing

Open innovation software	**Imaginatik**	collective intelligence software
	Napkin Labs	connect with consumers, experts, employees
	Venture Spirit	gamification platform
	Wellspring Worldwide	open innovation software
Intermediary open innovation	Big Idea Group	organize innovation contests and idea hunts
	Pharmalicensing	open innovation for the life sciences
	Chaordix	crowdsourcing engine for innovation
	DataStation	complete innovation platform
PEER PRODUCTION & P2P		
	Funding Circle	p2p lending
	Linux	open source software
	Wikipedia	peer produced encyclopedia
	Yahoo Answers	crowdsourced Q&A
CREATIVE CO-CREATION		
	Spreadshirt	shirt community
	Threadless	create and sell your t-shirts
	cafepress	shop, create or sell what's on your mind
	zazzle	create and sell products
	CreateMyTattoo	crowdsourced tattoo design
	Sellaband	crowdfunded bands
	Artistshare	fans funding new artists
	Quirky	community product development
	jovoto	co-creation & mass collaboration
	Mookum	co-creating lifestyle & interior products
	Quirky + GE	co-creating platform by quirky & General Electric
	Userfarm	co-creating platform for Video makers
CORPORATE INITIATIVES		
Product Ideas crowdsourcing	Fiat Mio	create a car
	BMW Customer Innovation Lab	in german
	InnovationJam*	IBM's idea generation project
	Dell IdeaStorm	external idea sourcing
	My Startbucks Idea	shaping the future of Starbucks
	Ideasbrewery	Heineken Ideas Brewery
	Connect + Develop	Innovation platform by P&G
Branding Desig	Peugeot	Peugeot's design contest
	Fluevog	open shoe design
	BurdaStyle	open source sewing
PUBLIC CROWDSOURCING		
	iBridge Network	platform for university innovation
	Science Commons	generic license agreements
	Picnic Green Challenge	ideas to save the planet
	Fold it	solve puzzles for science
	Galaxy Zoo	discovering the universe

Appendix 2 - Categories of indicators measuring innovation performance

Source: Gailly, n.a., p. 9

Inspired from: Goffin & Mitchell, 2005, Chap. 9

Skarzynski & Gibson, 2008, p. 222

Kuratko, Morris, & Covin, 2011, p. 393

Innovative organizations: What they do better		
More inputs	**Better processes**	**Better outputs**
• R&D and innovation spending • Share of personnel involved • Number of ideas and projects • Number of partnerships • Performance gaps identified and shared	• Project cost and outsourcing efficiency • Time to break-even / market, failure rate and percentage of dead bodies • Number of patents • Use of advanced innovation techniques / tools • Breadth and depth of open innovation network	• Sales from new/better products • Product launches and survival rates • Share of revenue from new products • Market share growth • Operational improvements • Return on investment of innovation projects • Intellectual property filings and revenues • Innovative image • People trained • Balance and promising project portfolio

Appendix 3 - Challenge Specific Agreement

Source: InnoCentive (2017)

Signed by: **ldeschrynmak**
Signed on: **05/31/2017 10:30**

Print this Agreement for your records

InnoCentive Ideation Challenge-Specific Agreement

Terms and Conditions of Challenge

Please Read This Carefully! You and InnoCentive are agreeing to a Challenge-Specific Solver Agreement (CSA) for this particular InnoCentive Challenge only, as permitted in the Terms of Use. This Challenge is being conducted by the Seeker under the authority of 15 U.S.C. § 3719 as amended. 15 U.S.C. § 3719 uses the term "Prize Competition" instead of the term "Challenge". For the purposes of this Challenge, the terms have the same meaning and are interchangeable. The Seeker for this InnoCentive Challenge has required that you accept the terms of this CSA, so please take the time to understand them.

If you click "I agree" and proceed to the Project Room for this InnoCentive Challenge, this CSA will be a valid and binding agreement for all purposes relating to this InnoCentive Challenge and in addition to your agreement to abide by the Terms of Use when you registered as a Solver. Please print and keep a copy of this CSA. No provisions you may have agreed to that are specific to any other individual InnoCentive Challenge will apply.

1. **Eligibility**

To be able to win a cash prize purse, an individual or entity must:

a. Agree to the rules of the prize competition (15 U.S.C. § 3719(g)(1));
b. Be an entity that is incorporated in and maintains a primary place of business in the United States, or (b) in the case of an individual, a citizen or permanent resident of the United States (15 U.S.C. § 3719(g)(3)).

However, submissions can be entertained from all Solvers regardless of whether they are U.S. citizens, U.S. permanent residents, or U.S. entities and are eligible to receive non-cash prize awards, if any. Meritorious submissions from non-U.S. citizens, permanent residents, and entities will also be recognized in publications issued by the Seeker announcing the results of the competition, such as press releases. Non-U.S citizens/permanent residents or non-U.S entities can also be included on U.S. teams. However, cash prize purses will only be awarded to persons and entities eligible to receive cash prize purses under the authority of 15 USC 3719, as amended.

c. Not be a Federal entity or Federal employee acting within the scope of their employment (15 U.S.C. § 3719(g)(4)). A Federal entity is defined by 5 U.S.C. Appendix 8G with a list of current Federal entities periodically posted on the Federal Register.

d. Assume risks and waive claims against the Federal Government and its related entities (15 U.S.C. § 3719(i)(1)(B)); and,

e. Not use Federal facilities, or consult with Federal employees during the competition unless the facilities and employees are made available to all individuals and entities participating in the competition on an equitable basis.

The following individuals or entities are not eligible regardless of whether they meet the eligibility criteria set forth above:

a. Any individual or organization who employs an evaluator on the Judging Panel or otherwise has a material business relationship or affiliation with any Judge.

b. Any individual who is a member of any Judge's immediate family or household.

c. The Seeker, participating organizations, and any advertising agency, contractor or other individual or organization involved with the design, production, promotion, execution, or distribution of the prize competition; and all employees, and all members of the immediate family or household of any such individual or organization.

d. Any individual or entity that uses Federal funds to develop the proposed solution now or any time in the past, unless such use is consistent with the grant award, or other applicable Federal funds awarding document. NOTE: Individuals or entities that have been funded by the Federal Government in the past to work within the technical domain of the competition are eligible provided their specific submission was not developed by them with Federal funds. Submissions that propose to improve or adapt existing federally funded technologies for the solution sought in this prize competition are also eligible. Individuals are also encouraged to consult with their employer Ethics Officer for additional guidance and considerations.

2. **Proposed Solutions.** As a Solver you may submit to InnoCentive your idea (your "Proposed Solution") to the InnoCentive Ideation Challenge to which this CSA relates ("InnoCentive Challenge®"). InnoCentive will make reasonable efforts to transmit Proposed Solutions to Seekers, however, nothing herein shall be construed as requiring InnoCentive to transmit every Proposed Solution on an InnoCentive Challenge to a Seeker. In addition, by submitting your Proposed Solution you thereby agree to provide reasonable assistance and additional information concerning your Proposed Solution to InnoCentive or the Seeker, if requested.

3. **Acceptance of Proposed Solution and License to Use.** InnoCentive will notify you within a commercially reasonable period of time after the end of the Time Period set forth in the Challenge Statement whether your Proposed Solution has been selected by Seeker for an award. The Seeker will judge all Proposed Solutions against the guidelines set out in the Challenge Statement and determine, in its sole discretion, which Proposed Solution best addresses the Challenge Statement guidelines. The Seeker has absolute and sole discretion to determine whether to accept your Proposed Solution, or any Proposed Solution, and whether to make an award, or multiple awards. Solver acknowledges and

agrees that InnoCentive is not responsible for and has no liability for selection of a winning solver. Solver further agrees to hold InnoCentive harmless in regard to selection of a winning solver. The meeting of the Challenge Statement guidelines does not automatically mean that the Proposed Solution will be eligible for an award. Proposed Solutions must NOT contain or include ideas, concepts, solutions or technology in respect of which a third party owns or controls the intellectual property. Proposed Solutions and descriptions thereof may not include trademarks or trade names of corporations or entities without the permission of their owners. By entering, you represent and warrant that:

- your entire Proposed Solution is an original work by you and you have not included third-party content (such as writing, text, graphics, artwork, logos, photographs, dialogue from plays, likeness of any third party, musical recordings, clips of videos, television programs or motion pictures) in or in connection with your Proposed Solution, unless (a) otherwise requested by the Seeker and/or disclosed by you in your Proposed Solution, and (b) you have either obtained the rights to use such third-party content or the content of the Proposed Solution is considered in the public domain without any limitations on use;
- no person or entity other than you has any right, title or interest in any part of your Proposed Solution;
- unless otherwise disclosed in the Proposed Solution, the use thereof by Seeker, or the exercise by Seeker of any of the rights granted by you under this Agreement, does not and will not infringe or violate any rights of any third party or entity, including, without limitation patent, copyright, trademark, trade secret, defamation, privacy, publicity, false light, misappropriation, intentional or negligent infliction of emotional distress, confidentiality, or any contractual or other rights;
- you have all the rights, licenses, permissions and consents necessary to submit the Proposed Solution and to grant all of the rights that you have granted to Seeker hereunder, including the right for Seeker to use and develop derivative works of and from the Proposed Solution;
- all persons who were engaged by you to work on the Proposed Solution or who appear in the Proposed Solution in any manner have:

    a. given you their express written consent to submit the Proposed Solution for unlimited, royalty-free use, exhibition and other exploitation in any manner and in any and all media, whether now existing or hereafter discovered, throughout the world, in perpetuity;

    b. provided written permission to include their name, image or pictures in or with your Proposed Solution (or if a minor who is not your child, you must have the permission of their parent or legal guardian) and you may be asked by Seeker to provide permission in writing;

    c. no claims for payment of any kind, including, without limitation, for royalties or residuals, has no approval or consultation rights or any rights of participation arising out of any use, exhibition or other exploitation of the Proposed Solution; and

d. not been and are not currently under any union or guild agreement that results in any ongoing obligations resulting from the use, exhibition or other exploitation of the Proposed Solution; and

- you understand, recognize and accept that Seeker has access to, may create or has created materials and ideas which may be similar or identical to the Proposed Solution in concept, theme, idea, format or other respects. You acknowledge and agree that Seeker shall have the right to use such same or similar materials, and that you will not be entitled to any compensation arising from Seeker's use of such materials. In the event that your entry is identical or similar to the Proposed Solution of another Solver, Seeker reserves the right, at the sole discretion of the Seeker, to either score one Proposed Solution higher than the other subject to the Challenge Statement guidelines or to randomly choose a Proposed Solution from all of those submitted which respond to the Challenge Statement guidelines.

By entering, you agree that: (i) all Proposed Solutions become Seeker's property and will not be returned; (ii) Seeker (and its authorized representatives) have the unlimited right to alter and/or edit the Proposed Solution or any part or element thereof; and (iii) Seeker and its licensees, successors and assigns have the right to use any and all Proposed Solutions, and the names, likenesses, voices and images of all persons appearing in the Proposed Solution, for future advertising, promotion and publicity in any manner and in any medium now known or hereafter devised throughout the world in perpetuity.

UPON SUBMISSION OF A PROPOSED SOLUTION TO THIS CHALLENGE, EACH SOLVER GRANTS TO THE SEEKER A ROYALTY-FREE, PERPETUAL, IRREVOCABLE, NON-EXCLUSIVE LICENSE AND RIGHT TO USE, DISCLOSE, REPRODUCE, PREPARE DERIVATIVE WORKS, DISTRIBUTE COPIES TO THE PUBLIC, AND PERFORM PUBLICLY AND DISPLAY PUBLICLY, IN ANY MANNER AND FOR ANY PURPOSE, AND TO HAVE OR PERMIT OTHERS TO DO SO. NOTWITHSTANDING GRANTING THE SEEKER A PERPETUAL, NON-EXCLUSIVE LICENSE FOR THE PROPOSED SOLUTION, THE SOLVER RETAINS OWNERSHIP OF THE IDEA OR CONCEPT DEMONSTRATED BY THE PROPOSED SOLUTION.

Please also be aware that your Proposed Solution may not be acknowledged and will not be received or held "in confidence" and your Proposed Solution does not create a confidential relationship or obligation of secrecy between you and any of the entities involved in this Challenge.

4. **Payments.** If the Seeker, which is the U.S. Bureau of Reclamation, accepts your Proposed Solution, the payment amount (called a "Cash Prize Purse") specified in the InnoCentive Challenge posted on the Service (or, in the case of partial payments of Cash Prize Purses, a "Revised Cash Prize Purse Amount", if applicable) will be paid directly to the winner(s) by the Seeker via electronic funds transfer. Payments may be subject to Federal and state income taxes. The Seeker will comply with IRS withholding and reporting requirements, where applicable. This normally consists of issuing an IRS Form 1099 to the Cash Prize Purse winner(s). If winners are already registered in the System for Award Management (SAM) at https://www.sam.gov, Reclamation will access their personal identifying information (PII) that is necessary to issue a payment via an electronic fund transfer to their bank account through SAM. If winners are not

registered in SAM, Reclamation will contact them to arrange for the collection of their PII that is necessary to issue prize payments via an electronic fund transfer.

Winner(s) can expect payments from 90 to 120 days after occurrence of each of the following: 1) you are notified by lnnoCentive of your Proposed Solution's Acceptance, 2) the completion of certain verification procedures by InnoCentive, and review and acceptance of such results by Seeker. 3) the completion and verification of the winner information required by the Seeker to process the payment as described above. Payment of any Cash Prize Purse is conditioned upon your cooperation with InnoCentive's verification procedures and the actions required by the Seeker. InnoCentive and Seeker are not responsible for payment of any Cash Prize Purse, or any part of any Cash Prize Purse, to any party other than to the Solver through whom the Proposed Solution was submitted to the Service. You understand that the Cash Prize Purse represents a complete payment, net of any local taxes that InnoCentive or Seeker may be required to withhold, for any Accepted Proposed Solution and that you are not entitled to any other compensation of any kind. If local law does not require withholding of taxes, all taxes on Cash Prize Purses shall be your sole responsibility.

5. **Seeker Privacy Statement**: The collection and maintenance of the PII from prize competition winners by the Seeker that is necessary to issue payments will comply with the Privacy Act of 1974. In order to protect the PII and guard against unauthorized uses, the PII collected will be used and maintained in accordance with the Department of the Interior System of Records Notification (SORN) for the Acquisition of Goods and Services (SORN DOI-87). In addition to using the PII to issue payments, DOI-87 informs of other authorized uses such as information transfers to any regulatory law enforcement authority, whether Federal, State, territorial, local, tribal or foreign when the information collected is relevant to civil, criminal, or regulatory investigations or prosecutions. Disclosure of PII to the Seeker is voluntary and there is no personal liability to you if you do not furnish the requested information. However, if information is not furnished payment may not be processed.
6. **General Conditions.** Seeker has the right to verify each Solver's eligibility and compliance with this CSA. The Seeker is a third-party beneficiary of this CSA, with the right to enforce the terms and conditions hereof directly against you. Participation is conditioned on providing the data required on the online registration form. Personal data will be processed in accordance with InnoCentive's Privacy Policy which can be located at http://www.innocentive.com/privacy-policy. Before including your address, phone number, e-mail address, or other personal identifying information in your proposal, you should be aware that the Seeker is under no obligation to withhold such information from public disclosure, and it may be made publicly available at any time. Solvers should direct any request to access, update, or correct information to InnoCentive. Neither InnoCentive nor Seeker is responsible for human error, theft, destruction, or damage to Proposed Solutions, or other factors beyond its reasonable control. Solver assumes any and all risks and waives any and all claims against the Seeker and its related entities, except in the case of willful misconduct, for any injury, death, damage, or loss of property, revenue, or profits, whether direct, indirect, or consequential, arising from

participation in this competition, whether the injury, death, damage, or loss arises through negligence or otherwise.

Solvers should not register with multiple e-mail and/or street addresses. In the event of a dispute as to any Proposed Solution, the authorized account holder of the email address used to enter will be deemed to be the person who submitted the Proposed Solution. The authorized "account holder" is the natural person assigned an email address by an Internet access provider, online service provider or other organization responsible for assigning email addresses for the domain associated with the submitted address.

7. **Representations and Warranties.** You represent and warrant that:

- All information provided by you regarding yourself and, if applicable, your business ("Solver Information") is true, accurate, current, and complete information and you will maintain and update the Solver Information to keep it true, accurate, current and complete.
- If you are an individual participating singly or in a group, you are a citizen or permanent resident of the United States or, if not a citizen or permanent resident of the United States, you acknowledge that you are ineligible to receive a cash prize purse.
- If you are an individual representing a business or other entity, you are authorized to enter into this Agreement on behalf of that business or entity and that business or entity is incorporated in and maintains a primary place of business in the United States or, if not incorporated in and maintaining a primary place of business in the United States, you acknowledge that it is ineligible to receive a cash prize purse.
- Unless otherwise disclosed in the Proposed Solution, you are the owner of the Proposed Solution and the Proposed Solution does not infringe or violate any patent, copyright, trade secret, trademark or other third-party intellectual property right.
- You have the right to grant the license in the Proposed Solution as required by Section 2 of this CSA.

8. **Liability *and Indemnification:*** *By participating in this Challenge, each Solver agrees to assume any and all risks and waive claims against InnoCentive, Inc., the federal government and its related entities, except in the case of willful misconduct, for any injury, death, damage, or loss of property, revenue, or profits, whether direct, indirect, or consequential, arising from participation in this Challenge, whether the injury, death, damage, or loss arises through negligence or otherwise. By participating in this Challenge, each Solver agrees to indemnify the federal government against third party claims for damages arising from or related to Challenge activities*
9. **No Insurance Required**: Based on the subject matter of the Challenge, the type of work that it will possibly require, as well as an analysis of the likelihood of any claims for death, bodily injury, or property damage, or loss potentially resulting from competition participation, Solvers are not required to obtain liability insurance or demonstrate financial responsibility in order to participate in this Challenge.

10. **Third Party Beneficiary -** You and InnoCentive acknowledge and agree that any Seeker shall be a third-party beneficiary of this Agreement, and each shall have the right to assert and enforce the provisions of this Agreement directly on its own behalf.
11. **Conflict.** In the case of any conflict between the terms of this CSA and the Terms of Use, this CSA controls.

# # #

Appendix 4 – Founding rounds

Source : CrunchBase, n.d.

Date	Amount/Round	Lead investor	Investors
Oct 2011	$7.5M / Venture		0
Aug 2009	$7.3M / Serie B	In-Q-Tel	1
May 2008	$6.5M / Serie B		3
Feb 2006	$9M / Serie A	Spencer Trask & Co.	3

TOTAL: $30.3 millions

Investors

Investor	Round(s)	Partner(s)
Eli Lilly	Serie B	-
In-Q-Tel	Serie B (Lead)	-
Lilly Venture	Serie A	Steve Hall
Omidyar Network	Serie A	-
SAP	Serie B	-
Spencer Trask & Co	Serie B Serie A (Lead)	- -

Appendix 5 - InnoCentive Challenge Types

Source : InnoCentive, (n.d).

- Ideation

An Ideation Challenge is a global brainstorm for producing a breakthrough idea. This could include ideas for a new product line, creative solutions to technical problems, a new commercial application for a current product, or even a viral marketing idea for recruiting new customers. Ideation Challenges guarantee that at least one Solver will win an award. Additionally, the posting period is typically shorter than with other Challenge types, resulting in quicker time-to-solution. Ideation Challenges involve intellectual property (IP) licensing; a Solver grants the Seeker a non-exclusive license to use any IP upon submission.

- Theoretical

A feasible design that may not yet be reduced to practice. A solution to a Theoretical Challenge will solidify the Solver's concept with detailed descriptions, specifications, supporting precedents, and requirements necessary to bringing a good idea closer to becoming an actual product, technical solution, or service. A Solver can expect a substantial financial reward if their submission is chosen as the winning solution by the Seeker, but an award need only be made if all the Challenge criteria are met. Depending on the Challenge requirements, Solvers will be required to either transfer or license the intellectual property (IP) in their solutions to the Seeker.

- RTP

An RTP is a Reduction to Practice Challenge to find a prototype that shows an idea in actual practice (though on a non-commercial scale). In an RTP Challenge, in addition to a detailed description, Solvers are asked to present physical evidence that proves their solution will work within the Seeker's specific needs, decision criteria, or manufacturing parameters. Solvers are given more time to generate data needed to support their proposals and prepare a response, and the financial awards are typically larger to reward the greater commitment required to work on these Challenges. Like the Theoretical Challenge, an award need only be made if all the Challenge criteria are met. Depending on the Challenge requirements, Solvers will be required to either transfer or license the intellectual property (IP) in their solutions to the Seeker.

- eRFP

An eRFP is an electronic Request for Partners or suppliers to provide materials or expertise to help solve a business Challenge. Seekers use the InnoCentive marketplace to find businesses or consultants that have already developed the technology they need or have the experience to help them develop it. Unlike other Challenges where a cash award is granted for the winning solution, eRFP winners typically negotiate the terms of the contract directly with the seeking organization.

Appendix 6 - Interview Bas van Vulgt, Heineken – May 23rd 2017

Can you tell us a bit about yourself.

In 2014 I started in Innovation, before that I was working more specifically on one innovation, which at that time was Radler. I was leading the global roll out of Radler which has been really successful. So far it is our biggest innovation. This department is now called "Global Commerce Innovation" as part of the commercial function.

Within the global commerce, we have a couple of departments or teams. Obviously there is the global Heineken team, secondly we have each national brands, we have cider, we have capability and we have a team taking care of innovation. This is the unbranded team for elements of innovation we work on that could be relevant for one or more brands. We are very much depending on local initiatives.

Within innovation I work with a small team called "front end innovation" and this is basically where the innovation start. This could come from idea in inside but also from outside.

When we are talking of innovation, do you focus more on products, process, an kind of idea or something more specific.

Within this department so the commerce innovation, we focus on consumer facing innovation. So process innovation or innovation for efficiency or example within the breweries, that is being led by global supply chain. And within global supply chain we have also a dedicated team which is now called Innovation & Research, and this team is actually our counterpart in the sense that whenever we need a support for a product innovation or packaging innovation, we go to them. But they also work on their own roadmap.

So the commerce team is leading when bringing innovation to market but in parallel, I&R is also leading on their own technical roadmap just to be sure that whenever the question comes from the business, they are ready to do so. The two teams works hands in hands and there is a lead and support role.

Within this department it is more a consumer focus, which could be product, something that we have been doing for a very long time, Radler is a good example of that. It is a mix of a beer and a lemonade and it already existed for a very long time. It was quite popular in Germany and Austria and the Austrian OpCo decided to commercialized it in 2007. From there it has evolved into different markets and at a time we decided - because it was such a success - to incubate it.

At that time there was a decision because we could do two things: we could register Radler as a brand name indeed but then it needs to be done in every market and it is quite challenging to sustain. SO there was a consciences decision not to do so because by not doing it, all the other brands and not only the Heineken brands could join and use the name Radler and that is very strong of course because it has become a category code. So that is what we did.

But innovation is not only beer, there are all the others products, no-alcoholic beverage, ciders, but also packaging is a big part of the innovation. This is typically something that is operating

within an OpCo and they work on everyday as this is a way to rejuvenises their brands. So this is done on a local level but globally we support that via an innovation platform and via some trainees and capabilities or even by seeing something interesting in one market and the copy it and apply it to another market. So this is more for products and packaging.

But there is another dimension which for the moment is really moving forward and we are focusing a lot on a global level on new business models, on e-commerce but also a lot on new collaboration. We are working with partners is such a way that you realize a new proposition and that is a bit of the open innovation part and this is a new element for HEINEKEN to explore. Those are typically the more difficult innovations and we have a support role to play because we can incubate certain proposition, we can develop those and from there role them out or make them available for other markets

Are the innovation usually drive in the same way? Do they come from the same starting point? If we compare for instance Amstel Radler and Amstel Ongerfiltered.

No in most case and that is also what it should be; innovation are brand led or portfolio because looking at the position of the brand, there could be a niche or a white space to explore. This could be new consumers or new occasions to consume. For a portfolio point of view, this is very much of : let's see what we have in hand and do we have any white spaces? So looking at that you can ask which brand can I stretch to fulfill those spaces. It is also very important when you think of an innovation that your new product fits to the brand essence and the positioning of the brand. And at the same time in terms of equity it is a way to stretch the positioning of the brand.

And to come back to the open innovation, you are trying to find some new relations with new partners and this applied to every field?

Yes, at Heineken I think we are very good at brewering and also in marketing or packaging innovation and for the incremental innovation, which is super important and this can either be done by an OpCo or led by the Global office and this accounts for 85 to 90% of our innovation revenue. Our innovation revenue last year 2016 was about 10% of the total revenue. So it is a really important engine for growth and for sustain, to keep on doing.

Now if we think about the Torps for example it is a packaging innovation because it is a new way of packaging our beers. So the Torps is the 2L cylinder that you put into the Sub. So packaging innovation is about using different formats, different materials and finding new interface with appliances

If we have a look at InnoCentive, the Open Innovation platform. Are you familiar with it? What do you think about it?

I think I know what it is but I have never looked at it. So I need to dive into it but I think the concept is interesting and surely relevant. We have a bit of experience with OI but not a lot. OI started to be in the agenda in 2012 with a couple of initiatives. We tried to reach outside and

have done a bit of crowdsourcing coming from consumers in deed for creative and specific targets and those initiative, gave a couple of things. Of course they help us getting experience in this area on how to successfully interact so how to use crowdsourcing but also on how to use the solution, how to move it into a concrete project. Because every time you have a solution which is on paper, how do you bring it forward. The experience was super relevant and from there we thought we should move forward into open innovation and we launch our Outside window to reach outside which is "Innovators BrewHouse". It is at the moment just a page where we say we are open to all suggestions as we have stopped having all kind solution providers because we weren't able to land it properly within the organization. At this point we want to look again and think on how we can bring this forward with a couple of ideas. One of these is : how to reach outside with challenges? That could be done via a platform like this (InnoCentive) our this could be done via our own platform. Because we also have our platform but we only use it for internal ideas but we can bring it outside to reach more ideas.

What did you learn from that short experience of Open-Innovation?

We learned that it is really important to be specific because otherwise – and this is one reason we stopped the campaign – is because it goes everywhere from right to left and it is really difficult and takes a lot of time to assess what is relevant , what is commercially feasible. So you need to scope it. We received a lot of responses, a few were very good, some were interesting but you also receive a lot of crap. And if you get 1000 responses you need to get back to all of them and this take a lot of time. So it is not only about scoping the challenge but also scoping the channel. Do you want to reach partners, startups, universities,.. ?

Did you required the help of an external agency for that?

Yes so for instance for the challenge of drop the C, which is both an internal challenge and an external challenge, we asked "Get in the Ring" if they could reach out to their startup community to see if there was something relevant on Dropping the C in regards of packaging. We don't want to reinvent everything so we will probably continue to use more external partners. But on some cases it is more interesting to do it on our own platform. It is very much depending on the eco-system because they will not come with the same solutions

I just have one more question regarding the fees of Get in the Ring: Could you give me an approximation for the Drop the C campaign? It may be interesting to compare it with InnoCentive. Usually, working with them costs from end-to-end $300 000.

We pay Get in the Ring a fraction of the costs indicated by you for the other platform.

Appendix 7 - Interview Frederic Sallmann, GSK vaccine – June 26th 2017

La R&D chez GSK ca comprend la “discovery” et le “medical trial”; c’est donc bien different du marketing, du support ou du manufacturing. Au sein de GSK nous utilisons une plateforme similaire a InnoCentive qui s appelle Inojet, la seule difference c est que c’est une Plateforme interne. Le problem d’innocentive c’est que ca gene à l’entrepreuneurship. On est victime du syndrome du NIH (Not Invented Here). Lorsqu on utilise InnoCentive et qu’on recoie une réponse à un challenge qu’on a proposé, c est très difficile de la faire accepter en interne. GSK c est 100 000 employes alors si deja en interne je ne trouve pas la solution c est qu on doit se remettre en question.Le principal problem d innocentive c est qui l n y a pas de dialogue ou tres peu entre l entreprise et le chercheur qui a apporte la reponse. InnoCentive s intercale toujours entre les deux.

Pour moi innocentive c est une platform de problem solving, pas de generation d idee. Il faut que le challenge soit definie de maniere clair et limpide autrement ca ne fonctionne pas. Alors pour une petite structure pourquoi pas mais pas pour GSK. De plus en plus on essaye de se rapprocher des partenaires pour limiter le nombre d intermediaire et c est exactment ce qu innocentive fait : etre un intermediaire. C est tres complique avec ce genre de platform de bien cible son sujet afin que le projet qu on essaye de mener soit en alignement avec la strategie du groupe.

Nous utilisons une plateforme en interne qui s appelle Spigit et pour laquelle il y a un vrai alignement strategique, car c elle-ci est accepter et bien encree dans l esprit du porteur d idee. Alors d un point de vue financier InnoCentive coute bien moins cher c est sur, c est plus rapide, on peut recevoir une multitude d idee, mais on en fait quoi? On est de toute facon capable d en developer que une voir deux a l a fois. Chez GSK France ils utilise Hackaton, c est la meme chose mais pour le developpement de prototypes. Ils ont recu un tas d idee et au final ils les ont mis dans un tiroir

Il y a une cassure dans le process de creation, principalement du au fait qui l n y ait pas d ecosysteme. Nous somme pour le crowdsourcing, nous proposons chaque annee des challegnes a des universite ou des business school

Resume, ca peut etre interessant mais pour une situation bien particuliere ou problem solving. Pas toujours acces au porteur d idee, tres genant pour integrer l idee. On augmente le risqué d adoption et de developpement. Le fait de developer et commercialiser, c est le deja derisquer un projet.

GSK a un budget R&D de 4,5 milliard d euros

Appendix 8 – Interview Thierry Collard, Solvay – June 16th 2017

Comment fonction Solvay ?

Dans un groupe comme le nôtre il y a plusieurs axes d'innovation. Il y a les axes corporate, qui dépendent de la recherche et innovation corporate et puis il y a également des innovations qui sont divisés par business unit en fonction des produits et des orientations stratégiques des différents secteurs d'activités. En ce qui me concerne - et mon équipe de manière plus général- nous nous occupons de la recherche et développement « external affair » qui a pour but d'assister tant les chercheurs corporate que les chercheurs des business unit dans leurs projet d'innovation collaborative. Ca comporte des secteurs aussi variés que la recherche de collaboration adéquate pour différents projets, la recherche de subsides dans des projets collaboratif. Ca concerne également le fait d'inscrire les différents projets d'innovation de Solvay dans différents feuilles de route officielle. Je suis entre autre responsable de la partie européenne et mon rôle est de placer les experts Solvay dans tous les groupes de travail possible et imaginable au niveau européen lors de la rédaction de feuilles de route stratégique, sur tel ou tel type de thématique. Par exemple l'intensification des procédés et diminution de l'empreinte carbone, les matériaux composites, les produits pour batteries,… il y a plein de groupe de travail qui nous entourent et dont il faut être un peu au courant pour que dans une démarche d'innovation collaborative, ce qui se passe autour de nous soit en ligne avec notre préoccupation stratégique. On ne va pas faire de l'innovation ouverte juste pour faire de l'innovation. En gros il faut que ça nous rapporte, il faut que ça soit un échange.

On a évidemment au niveau chimie beaucoup d'initiatives si je prends l'Europe notre objectif c'est d'être présent dans tous les partenariats public/privé qui sont au niveau européen des consortia qui rassemblent des universités des centre de recherches, des PMEs, et des grands groupes autour d'une thématique. Par exemple il y a une PPP sur le bâtiment intelligent, sur l'aéronautique…

Le solar Impulse en fait partie ?

Non ça c'est plutôt une vitrine, une image qui permet de véhiculer une image dynamique d'une société tournée vers les matériaux de pointe.

Nous sommes surtout concentré sur l'opérationnel. Des chercheurs viennent chez nous nous présentent le projet qu'ils aimeraient bien mener sur telle ou telle thématique : « Nous cherchons un partenariat. Est-ce que vous pouvez nous aider ? » Ces chercheurs ce sont des chercheurs de chez nous, soit rattachés à la recherche corporate soit rattachés aux business units. Ça peut aller jusqu' en production, si on recherche des partenaires pour mener à terme un projet visant à améliorer le rendement d'un procède ou à diminuer l'empreinte carbone,…

Ce que l'on fait également c est proposer des plateformes d'innovation ou travailler avec des partenaires académiques afin de former une plateforme d'innovation sur nos thématiques.

Est-ce plus souvent votre initiative ou est-ce que ça vient des deux côtés ?

Ca dépend. Nous somme tout de même fortement sollicite. On a ainsi plusieurs partenariat en France, notamment un avec le CNRS ou nous avons monté un laboratoire conjoint qui s'appelle le laboratoire du futur. Si vous allez voir sur internet vous trouverez sans difficulté. C'est le LOF qui se trouve à Bordeaux et qui est constitué à 50% de personnel Solvay et 50% de scientifiques venant du CNRS et dont la thématique principale est la micro fluidité. Donc voici un exemple. On a le même type de plateforme à Shangai. On monte également à Lyon une plateforme mais qui est plutôt une plateforme mutualisée, c'est une autre manière de faire une plateforme ; on donne accès à une plateforme équipée de matériel de mesure, de laboratoire, de petites unités de pilote,… à des sociétés qui voudraient l'utilisé. On y met également du personnel qui n'est pas spécialement le nôtre, car c'est une plateforme mutualisée donc montée et financée par plusieurs sociétés, il y a avec nous Arkema et d'autres. Chacun met du personnel en détachement sur la plateforme mais en même temps on va demander une participation aux sociétés qui vont venir utiliser les labos.

Les plateformes c'est vrai qu'il y en a énormément. Il y a également des possibilités d'avoir des incubateurs mais ça c'est moins courant. Pour l'instant c'est un modèle qu'on recherche un peu à développer et on a déjà eu quelques expérience la dedans qui se sont bien passées

L'initiative Startup world ça en fait partie ?

Oui ça c'est une initiative qui a été démarré il y 5 ou 6 ans et honnêtement ça n'a pas fonctionné super bien. Pourquoi, parce qu'il n'y avait pas une vision commune, ce qui est primordiale pour un incubateur. La société qui propose ses locaux doit avoir une vision de ce qu'elle désire accueillir. Il faut que ça soit en alignement avec notre vision de recherche et d'innovation. Maintenant on regarde plus dans le domaine des matériaux composites, ou traitement de l'eau et de l'air. Si il n y a pas d écosystème ça ne peut pas fonctionner.

Il faut bien cibler son sujet j'imagine.

Oui tout à fait.

Alors on ne fait pas de l'innovation ouverte avec tout non plus. Il y a des sujets tabou pour lequel Solvay ne veut vraiment rien divulguer et ne désire pas faire de l'innovation ouverte. Mais tous les groupes sont comme ça. Sur les sujets très stratégiques on ne veut pas trop divulguer d'information.

Chez Solvay quelle est l'importance de l'innovation ouverte par rapport à l'innovation ferme ?

Maintenant il y a tout de même beaucoup plus d'innovation ouverte. Je dirai que depuis 3 – 4 ans, un groupe comme le nôtre c'est bien rendu compte qu'on ne peut pas tout faire soit même. On connait nos points fort, en synthèse, en analyse, en catalyse,… par contre des nouvelles technologies arrivent ou des startups ont développé un nouveau procède, et bien on ne va pas s'amuser à le répéter mais plutôt chercher à collaborer avec eux. Voir prendre une participation dans la start-up si vraiment c'est intéressant. On a fait ça il y a quelques années dans le domaine de l'électronique organique. A l'époque on avait un partenariat privilégié avec une société américaine qui était vraiment à la pointe dans ce domaine. On a d'abord pris une participation de l'ordre de 20% je pense et a un moment donné Solvay a fait le pas et a racheté la société car la technologie que Flextronic proposait était en alignement avec les besoins de Solvay. C'est un peu la façon dont on fonctionne pour l'innovation ouverte.

Pour ce qui est de nos liens avec nos partenaires, il est très important évidemment d'identifier les bons et ça n'est pas si simple. Pour un groupe mondial comme Solvay qui désire créer un écosystème, on ne va pas avoir la même activité dans chaque région. C'est clair que le Brésil va être plus poussé vers les produits bio-sourcés comme par exemple avec l'éthanol de canne à sucre comme matière première. On essaye donc dans la plupart des cas de garder les ressources locales pour créer de la chimie locale.

Il est bon de savoir également que chez Solvay il y a un directeur scientifique et son équipe qui sont très proches du terrain mais plutôt on des contact direct avec les chercheurs et les université ou grande écoles afin de savoir jouer la dessus mais également en préparant un peu l'avenir en engageant des chercheurs qui sont en post doctorat ou autre pour venir travailler chez nous. En France il y a un dispositif très intéressant qui s'appelle le PSIF. C'est le principe d'accueillir au sein de l'entreprise des académiques afin d'avoir une meilleure relation entre le monde de l'entreprise et le monde universitaire.

Est-ce qu'on pourrait développer la position de Solvay par rapport à InnoCentive ? Est-ce justement une initiative corporatif ou d'un business unit ?

C'est une très bonne initiative et il est vrai qu'a un moment donne nous étions assez impliqué la dedans mais il faut vraiment quelque un qui s'en occupe. A l'époque nous avions quelque un mais il a quitté le groupe et à partir de ce moment-là, il y a eu l arrive de Rhodia, la restructuration et ça a complètement chamboulé l'univers de l'innovation. Maintenant nous travaillons plus sur la collaboration.

Comme je vous l'ai dit c'est très intéressant mais il n y a personne qui s'occupe de ca pour le moment. Un profil idéal pour ça je pense que ce serait un chercheur qui y passerait une partie de son temps. Mais pour ça il faut que ça soit une mission officielle, que ça soit inscrit dans ses objectifs sinon ça ne va pas fonctionner. Si on dit à quelque un « veux-tu bien t occuper de ce projet » mais sans que ça soit officiel, ça ne va pas fonctionner.

Solvay cherche plus de partenariat à long terme. Ca ne les intéresse plus spécialement de juste faire de l'one-shoot avec InnoCentive

Appendix 9 – InnoCentive's data collection

Source : Innocentive (n.d.)

WayBackMachine, (n.d.)

	Basic Data				
Date of collect	Ref	Posted	Deadline	Posted since	Time required
24-avr	1	13/04/17	14/05/17	11	31
24-avr	2	12/04/17	12/06/17	12	61
24-avr	3	12/04/17	11/05/17	12	29
24-avr	4	06/04/17	05/07/17	18	90
24-avr	5	06/04/17	22/11/17	18	230
24-avr	6	03/04/17	03/05/17	21	30
24-avr	7	23/03/17	22/05/17	32	60
24-avr	8	20/03/17	05/05/17	35	46
24-avr	9	10/03/17	24/04/17	45	45
24-avr	10	03/03/17	08/05/17	52	66
23-mars	11	14/02/17	16/03/17	37	30
23-mars	12	08/02/17	10/08/18	43	548
23-mars	13	07/02/17	08/03/17	44	29
23-mars	14	06/02/17	02/04/17	45	55
23-mars	15	01/02/17	01/04/17	50	59
23-mars	16	27/01/17	26/02/17	55	30
23-mars	17	24/01/17	26/03/17	58	61
23-mars	18	23/01/17	22/02/17	59	30
23-mars	19	20/01/17	06/03/17	62	45
23-mars	20	19/01/17	04/03/17	63	44
23-mars	21	19/01/17	04/03/17	63	44
23-mars	22	17/01/17	16/02/17	65	30
23-mars	23	13/01/17	14/03/17	69	60
23-mars	24	05/01/17	05/03/17	77	59
23-mars	25	04/01/17	19/02/17	78	46
23-mars	26	04/01/17	20/02/17	78	47
23-mars	27	04/01/17	19/02/17	78	46
23-mars	28	22/12/16	22/01/17	91	31
23-mars	29	20/12/16	03/05/18	93	499
23-mars	30	20/12/16	22/11/17	93	337
23-mars	31	19/12/16	18/01/17	94	30
23-mars	32	15/12/16	29/01/17	98	45
23-mars	33	15/12/16	15/01/17	98	31
23-mars	34	15/12/16	15/01/17	98	31
23-mars	35	15/12/16	15/01/17	98	31
23-mars	36	13/12/16	13/03/17	100	90
23-mars	37	13/12/16	13/03/17	100	90
23-mars	38	13/12/16	13/03/17	100	90
23-mars	39	13/12/16	13/02/17	100	62
23-mars	40	08/12/16	08/01/17	105	31
23-mars	41	01/12/16	15/01/17	112	45

23-mars	42	29/11/16	05/01/17	114	37
23-mars	43	29/11/16	08/01/17	114	40
23-mars	44	25/11/16	08/01/17	118	44
23-mars	45	23/11/16	02/01/17	120	40
23-mars	46	22/11/16	02/01/17	121	41
23-mars	47	21/11/16	22/01/17	122	62
23-mars	48	17/11/16	01/01/17	126	45
23-mars	49	15/11/16	15/12/16	128	30
23-mars	50	11/11/16	11/12/16	132	30
23-mars	51	10/11/16	30/12/16	133	50
23-mars	52	01/11/16	08/12/16	142	37
23-mars	53	31/10/16	01/12/16	143	31
22-nov	54	26/10/16	27/11/16	27	32
22-nov	55	21/10/16	05/12/16	32	45
23-mars	56	19/10/16	17/01/17	155	90
23-mars	57	17/10/16	16/11/16	157	30
23-mars	58	14/10/16	28/11/16	160	45
23-mars	59	10/10/16	09/01/17	164	91
23-mars	60	03/10/16	31/01/17	171	120
23-mars	61	01/10/16	31/12/99	173	359124
23-mars	62	22/09/16	23/10/16	182	31
23-mars	63	08/09/16	09/10/16	196	31
23-mars	64	29/08/16	11/10/16	206	43
23-mars	65	24/08/16	21/02/17	211	181
23-mars	66	08/08/16	10/10/20	227	1524
23-mars	67	05/08/16	12/09/16	230	38
09-août	68	25/07/16	25/09/16	15	62
09-août	69	18/07/16	17/08/16	22	30
09-août	70	18/07/16	15/09/16	22	59
23-mars	71	11/07/16	11/09/16	255	62
09-août	72	11/07/16	10/08/16	29	30
09-août	73	07/07/16	07/09/16	33	62
09-août	74	23/06/16	31/08/16	47	69
23-mars	75	10/06/16	24/06/16	286	14
13-mai	76	09/05/16	09/06/16	4	31
23-mars	77	05/05/16	31/07/16	322	87
13-mai	78	05/05/16	05/06/16	8	31
13-mai	79	28/04/16	29/05/16	15	31
13-mai	80	28/04/16	30/05/16	15	32
13-mai	81	27/04/16	26/06/16	16	60
13-mai	82	25/04/16	24/06/16	18	60
13-mai	83	25/04/16	24/06/16	18	60
13-mai	84	21/04/16	23/05/16	22	32
16-avr	85	06/04/16	05/06/16	10	60
16-avr	86	06/04/16	09/05/16	10	33
16-avr	87	04/04/16	15/05/16	12	41

16-avr	88	31/03/16	10/05/16	16	40
16-avr	89	31/03/16	10/05/16	16	40
16-avr	90	30/03/16	09/01/17	17	285
16-avr	91	21/03/16	22/05/16	26	62
16-avr	92	21/03/16	21/04/16	26	31
16-avr	93	18/03/16	17/06/16	29	91
16-avr	94	18/03/16	17/06/16	29	91
23-mars	95	01/03/16	30/05/16	387	90
08-mars	96	12/02/16	12/04/16	25	60
08-mars	97	11/02/16	11/05/16	26	90
08-mars	98	10/02/16	11/03/16	27	30
08-mars	99	10/02/16	13/03/16	27	32
08-mars	100	29/01/16	20/03/16	39	51
08-mars	101	27/01/16	27/02/16	41	31
23-mars	102	27/01/16	31/05/16	421	125
08-mars	103	12/01/16	12/02/16	56	31
31-janv	104	04/01/16	18/02/16	27	45
31-janv	105	24/12/15	24/01/16	38	31
31-janv	106	22/12/15	05/02/16	40	45
31-janv	107	18/12/15	17/02/16	44	61
31-janv	108	16/12/15	16/01/16	46	31
05-sept	109	03/09/15	04/11/15	2	62
05-sept	110	01/09/15	16/10/15	4	45
05-sept	111	01/09/15	30/11/15	4	90
05-sept	112	24/08/15	23/09/15	12	30
05-sept	113	19/08/15	20/09/15	17	32
05-sept	114	11/08/15	11/11/15	25	92
05-sept	115	10/08/15	10/11/15	26	92
05-sept	116	07/08/15	21/09/15	29	45
05-sept	117	03/08/15	03/09/15	33	31
11-août	118	28/07/15	27/08/15	14	30
11-août	119	27/07/15	26/08/15	15	30
11-août	120	16/07/15	16/08/15	26	31
11-août	121	16/07/15	08/09/15	26	54
11-août	122	15/07/15	07/09/15	27	54
11-août	123	14/07/15	16/08/15	28	33
23-mars	124	09/07/15	09/10/15	623	92
15-mars	125	05/03/15	04/04/15	10	30
15-mars	126	04/03/15	02/06/15	11	90
15-mars	127	03/03/15	02/04/15	12	30
15-mars	128	27/02/15	03/04/15	16	35
15-mars	129	26/02/15	28/03/15	17	30
15-mars	130	25/02/15	13/04/15	18	47
15-mars	131	23/02/15	26/03/15	20	31
15-mars	132	16/02/15	18/03/15	27	30
15-mars	133	16/02/15	20/04/15	27	63

15-mars	134	13/02/15	21/03/15	30	36
03-févr	135	28/01/15	27/02/15	6	30
03-févr	136	26/01/15	25/02/15	8	30
03-févr	137	23/01/15	22/02/15	11	30
22-déc	138	16/12/14	16/02/15	6	62
22-déc	139	16/12/14	18/01/15	6	33
22-déc	140	16/12/14	16/02/15	6	62
22-déc	141	15/12/14	15/01/15	7	31
22-déc	142	15/12/14	17/03/15	7	92
22-déc	143	15/12/14	30/01/15	7	46
15-déc	144	12/12/14	12/01/15	3	31
15-déc	145	10/12/14	26/01/15	5	47
15-déc	146	09/12/14	23/01/15	6	45
15-déc	147	09/12/14	31/01/15	6	53
15-déc	148	02/12/14	08/01/15	13	37
15-déc	149	01/12/14	28/12/14	14	27
15-déc	150	01/12/14	15/01/15	14	45
15-déc	151	25/11/14	05/01/15	20	41
29-août	152	22/08/14	21/10/14	7	60
29-août	153	22/08/14	03/10/14	7	42
29-août	154	20/08/14	20/11/14	9	92
29-août	155	20/08/14	20/09/14	9	31
20-août	156	15/08/14	01/02/15	5	170
20-août	157	15/08/14	15/12/14	5	122
20-août	158	13/08/14	29/09/14	7	47
20-août	159	13/08/14	14/09/14	7	32
20-août	160	11/08/14	11/11/14	9	92
20-août	161	11/08/14	25/09/14	9	45
20-août	162	08/08/14	08/09/14	12	31
20-août	163	07/08/14	07/11/14	13	92
20-août	164	05/08/14	05/11/14	15	92
20-août	165	04/08/14	08/09/14	16	35
20-août	166	01/08/14	05/09/14	19	35
20-août	167	29/07/14	27/09/14	22	60
20-août	168	24/07/14	24/08/14	27	31
20-août	169	23/07/14	23/08/14	28	31
23-mars	170	13/11/13	31/12/99	1226	360177
17-août	171	14/08/13	13/10/13	3	60
17-août	172	08/08/13	13/09/13	9	36
17-août	173	07/08/13	07/10/13	10	61
17-août	174	06/08/13	06/09/13	11	31
17-août	175	04/08/13	04/09/13	13	31
17-août	176	02/08/13	02/09/13	15	31
17-août	177	30/07/13	01/10/13	18	63
17-août	178	30/07/13	31/08/13	18	32
17-août	179	08/01/13	08/04/13	221	90

17-août	180	08/01/13	07/02/13	221	30
17-août	181	07/01/13	07/02/13	222	31
17-août	182	03/01/13	04/03/13	226	60
17-août	183	02/01/13	02/03/13	227	59
17-août	184	28/12/12	31/05/13	232	154
17-août	185	22/12/12	21/02/13	238	61
17-août	186	21/12/12	21/02/13	239	62
17-août	187	21/12/12	21/02/13	239	62
17-août	188	21/12/12	21/01/13	239	31

Basic Data				SOURCES
Ref	Remaining time	Award	N# Solvers	Premium
1	20	20	122	1
2	49	varies	56	1
3	17	10	264	1
4	72	ee details (500 / 100 et 3	172	1
5	212	60	113	1
6	9	15	223	1
7	28	20	205	1
8	11	see details (5 multiple)	178	1
9	0	10	374	1
10	14	20	259	1
11	under eval	10	361	1
12	505	100	69	1
13	under eval	10	119	1
14	10	50	291	1
15	9	25	176	1
16	under eval	10	361	1
17	3	20	172	1
18	under eval	25	119	1
19	under eval	varies	77	1
20	under eval	15	121	1
21	under eval	15	39	1
22	under eval	10	246	1
23	under eval	15	104	1
24	under eval	20	154	1
25	under eval	varies	61	1
26	under eval	see details	79	1
27	under eval	15	149	1
28	under eval	10	174	1
29	406	100	165	1
30	244	20	175	1
31	under eval	10	236	1
32	under eval	30	101	1
33	under eval	20	113	1
34	under eval	15	191	1
35	under eval	15	147	1
36	under eval	see details(10)	72	1
37	under eval	50(150)	282	1
38	under eval	50	217	1
39	under eval	20	596	1
40	under eval	25	243	1
41	under eval	20	93	1

42	under eval	20	218	1
43	under eval	15	0	1
44	under eval	15	176	1
45	under eval	10	220	1
46	under eval	10	197	1
47	under eval	15	235	1
48	under eval	20	83	1
49	under eval	10	279	1
50	under eval	30	250	1
51	under eval	10	249	1
52	under eval	20	139	1
53	under eval	10	135	1
54	5	10	167	1
55	13	varies	88	1
56	under eval	varies	106	1
57	under eval	15	171	1
58	under eval	30	168	1
59	under eval	20	181	1
60	under eval	30	202	1
61	358951	10	325	1
62	under eval	15	269	1
63	under eval	15	135	1
64	under eval	20	224	1
65	under eval	25	114	1
66	1297	1000	150	1
67	under eval	20	152	1
68	47	varies	96	1
69	8	15	139	1
70	37	10	165	1
71	under eval	15	256	1
72	1	10	188	1
73	29	see details (400-1000)	196	1
74	22	15	416	1
75	under eval	15	647	1
76	27	10	104	1
77	under eval	see details (2x min 20)	267	1
78	23	20	104	1
79	16	15	138	1
80	17	10	124	1
81	44	20	99	1
82	42	15	63	1
83	42	15	51	1
84	10	15	119	1
85	50	15	70	1
86	23	10	50	1
87	29	10	161	1

88	24	20	107	1
89	24	20	90	1
90	268	200	104	1
91	36	20	245	1
92	5	10	235	1
93	62	25	68	1
94	62	25	68	1
95	under eval	30	213	1
96	35	10	305	1
97	64	see details	83	1
98	3	30	394	1
99	5	10	107	1
100	12	50	174	1
101	under eval	50	269	1
102	under eval	30	853	1
103	under eval	15	278	1
104	18	10	268	1
105	under eval	15	241	1
106	5	20	278	1
107	17	21	164	1
108	under eval	15	125	1
109	60	20	63	1
110	41	varies	38	1
111	86	25	59	1
112	18	15	178	1
113	15	6	235	1
114	67	30	136	1
115	66	75	239	1
116	16	100	228	1
117	under eval	15	350	1
118	16	10	133	1
119	15	20	128	1
120		20	194	1
121	28	15	213	1
122	27	see details (400-1000)	210	1
123	5	20	310	1
124	under eval	25	300	1
125	20	10	104	1
126	79	see details	34	1
127	18	25	223	1
128	19	10	163	1
129	13	15	238	1
130	29	10	121	1
131	11	20	309	1
132	3	15	139	1
133	36	10	208	1

134	6	30	236	1
135	24	15	141	1
136	22	20	117	1
137	19	10	159	1
138	56	25	63	1
139	27	15	139	1
140	56	10	59	1
141	24	21	64	1
142	85	20	59	1
143	39	15	28	1
144	28	10	54	1
145	42	varies	45	1
146	39	varies	30	1
147	47	15	89	1
148	24	20	124	1
149	13	varies	45	1
150	31	varies	40	1
151	21	10	83	1
152	53	see details	124	1
153	35	15	67	1
154	83	100	67	1
155	22	20	232	1
156	165	see details	109	1
157	117	100	93	1
158	40	varies	35	1
159	25	20	168	1
160	83	20	106	1
161	36	10	116	1
162	19	15	267	1
163	79	20	70	1
164	77	50	72	1
165	19	5	195	1
166	16	10	106	1
167	38	25	151	1
168	4	50	145	1
169	3	30	262	1
170	358951	25	254	1
171	57	25	70	1
172	27	5	173	1
173	51	25	158	1
174	20	7,5	184	1
175	18	15	115	1
176	16	10	247	1
177	45	15	263	1
178	14	7,5	251	1
179	under eval	60	231	1

180	under eval	1	156	1
181	under eval	5	450	1
182	under eval	20	411	1
183	under eval	20	151	1
184	under eval	1000	645	1
185	under eval	25	258	1
186	under eval	25	217	1
187	under eval	20	352	1
188	under eval	10	194	1

	Challenge Disciplines			
Ref	Engineering/Design	Physical Sciences	Business & Entrepreneurship	Chemistry
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Challenge Disciplines						
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