



“CONGRESO INTERNACIONAL DE INVESTIGACIÓN E INNOVACIÓN 2014”

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## Exploring the creation of disruptive innovations by student start-ups through an open innovation perspective: The case of Stu:Drive

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### **Exploring the creation of disruptive innovations by student start-ups through an open innovation perspective: The case of Stu:Drive**

#### **Abstract:**

New firms created by students are a clear proof of the positive impact of universities in society. These new small firms, also known as start-ups, begin with an original idea from a student (or a team of them) triggered by several factors and mechanisms. Most universities have considerably focused in fostering the proper type of mechanisms to ignite an entrepreneurial attitude in students during the last years. Nevertheless, from the vast range of available options a university might consider, it is very difficult to encompass several of them under one concept that can be promoted amongst students. This problem implies, on one side, that more efforts and projects from universities would need to be implemented, and on the other side, that students may not have a clear direction on how to focalize their novel and entrepreneurial ideas. This papers attempts to provide a solution to this gap by suggesting the use of an open innovation perspective to support students not only to innovate technologically and create a start-up with it, but also to go beyond new firm creation and achieve on creating a new market. To do this, the paper briefly analyzes the successful case of the company Stu:Drive, a student start-up originated by Serbian students operating without competitors throughout the Balkans. Stu:Drive provides a platform for car-sharing that allows people to reduce their transportation costs and has become a very popular way of travelling during the last months. Through the case of this firm, the paper discusses the novel business model of Stu:Drive and how the start-up created a successful disruptive innovation in the transportation industry in a large region of Eastern Europe. The paper concludes with recommendations for universities, students and policy-makers in education systems from developing economies, as well as some suggestions for future directions on research on the phenomenon of student start-ups.



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**Keywords:** student start-ups; open innovation; disruptive innovation; new business models; transportation industry; Stu:Drive; entrepreneurial intentions

### 1. Introduction

Universities have been largely known as a source of new knowledge and technology. In the same way but more recently, universities are also considered as generators of new companies through their students. New small firms, also known as start-ups, could be university-based or not, but undeniably academic institutions have played a mayor role in promoting an entrepreneurial attitude in the students that create start-ups. To promote this attitude, academic institutions have a wide range of different mechanisms that may or may not be useful for the purpose of fostering entrepreneurial intentions. These can range from special courses in entrepreneurship, workshops with successful entrepreneurs, business incubators, business accelerators and more recently student competitions.

All these and more activities could be encompassed on a bigger phenomenon called ‘University Entrepreneurship’ (Rothaermel, Agung, & Jiang, 2007). However, even if university entrepreneurship could be seem as a possible way to include several activities to promote entrepreneurship and innovation inside universities, it does not deal with the fact that each of these activities needs to be implemented independently as specific projects with limited scopes. This implies that in order to benefit from most of them, an academic institution may need actually to implement them all, which might not be the most efficient way to encourage entrepreneurial intention in students.

Therefore, this paper proposes that a better and simpler way to achieve more entrepreneurial activity in students could be by showing and educating them with an open innovation perspective. To show an example of how this perspective could be fruitful, we use the case of Stu:Drive, a European start-up originally created by students from Serbia but now based in Amsterdam. This new small firm originated from a simple idea is now



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the leader of the car sharing services in the Balkan Region in Eastern Europe. The scope of this paper is not explain how specifically Stu:Drive has become successful, but rather to show how novel ideas for new businesses can be generated.

The paper is structured in the following way. In the next paragraphs we briefly mention the theoretical background of entrepreneurial education and an open innovation perspective to show the reader where in literature this paper could be allocated. In section 2, we explain the methodology of the paper by providing details about the case of the company Stu:Drive. In section 3, we comment the results and discussions of the case and its implications to the concepts of open innovation perspective. Likewise, we provide some insights about the entrepreneurial attitude of emerging countries, which make the case of Stu:Drive even more revealing. We conclude in Section 4 with some final remarks and future research directions.

### *1.1 Entrepreneurial Education and Universities*

The “entrepreneurial spirit” is frequently seen as natural in people, however it seems to be a restrictive force that prevents them to engage fully in entrepreneurial behavior and activities. This force may be translated into idiosyncratic obstacles, which could potentially be surpassed with specific business and entrepreneurial education (Klinger & Schündeln, 2011). The nature of entrepreneurship education includes its multidisciplinary basis and the expectation that entrepreneurship apprentices may be involved in the longer term in business, government and academia (Brush, 2003).

The involvement desired is not only as entrepreneurship practitioners but also hopefully as potential teachers or “entrepreneurial coaches” that spread the knowledge. However, just as important as educators are for the entrepreneurship diffusion, it is also the range of mechanisms that can stimulate training opportunities in students and population in general which in turn will create additional support for entrepreneurial activities and consequently new business in society (Chapman & Skinner, 2006).

An essential characteristic of entrepreneurship education is its focus on creation of



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new ventures and organizations, new combinations of goods and services and others. This creation might happen at multiple level of analysis e.g. individuals, teams, new organizations (Brush, 2003) and in different contexts depending on the industry, technology and culture among many other several variables. Entrepreneurship programs and courses focus on the individual rather than the context where the new business or expansion process develops. There is evidence that entrepreneurship programs taught to science and engineering students raises significantly some attitudes and the overall entrepreneurial intention and inspiration to start a business (e.g. Souitaris, Zerbinati, & Al-Laham, 2007).

An entrepreneurship program should not be considered only as a course but also as long scale event including a portfolio of complementary activities (ibid). These four activities could be grouped in 4 components: “taught components” with modules or courses, “business-planning” component with business plan competitions, “interaction with action” component which includes practitioners’ talks and networking events, and “university support” component encompassing pool of technology, space for meeting, seed funding activities among others. In this paper a wider perspective for entrepreneurship education is presented. While it is considered components of Souitaris et al. (2007), the testimonies and some diagrams from Chapman & Skinner (2006) and the remarks from Henry, Hill, & Leitch (2005b), it is also added the view of what are in general the sources and activities that entrepreneur could be involved for the entrepreneurship education, training and reinforcement (see Table 1).

**Table 1.** Sources and activities of entrepreneurship education, training and promotion

Sources and activities of entrepreneurship education, training and promotion
<b>a) Formal Education</b> <ul style="list-style-type: none"><li>- Specialized centers, school and institutes.</li><li>- Long courses and programs (e.g. certificates, masters and bachelors degrees).</li><li>- Medium courses and events (e.g. per semester, summer schools, internships).</li><li>- Short events (courses, workshops, boot camps, practitioners’ talks, seminars).</li></ul>



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<b>b) Competitions and Projects (training)</b> <ul style="list-style-type: none"><li>- Local, Regional and International competitions.</li><li>- University, government and industry sponsored “challenges”.</li></ul>
<b>c) Business incubators and accelerators</b> <ul style="list-style-type: none"><li>- University, government and industry based.</li></ul>
<b>d) Loans and grants</b> <ul style="list-style-type: none"><li>- From government, banks and other institutions.</li></ul>
<b>e) Other sources of training and promotion</b> <ul style="list-style-type: none"><li>- Learning centers (public and private), Associations (including NGOs), Foundations (including corporate-based ones), Student Clubs and others.</li></ul>

### 1.2 Innovation: Disruptive and an open perspective

Innovation has always been associated as a positive noun, especially in the business environment (van der Meer, 2007). There is evidence to a large extent that identifies innovation as the principal driver for companies to be created, flourish, grow, maintain a high profitability and sustain in the long term (Elmqvist, Fredberg, & Ollila, 2009). One type of innovation emerging as strategically important in practice is the Disruptive Innovation popularized by Christensen (1997). A disruptive innovation helps create a new market, and eventually goes on to disrupt an existing market and value network displacing an earlier technology. The concept is used to describe innovations that improve a good or a service in new ways that the current market is not familiar, for instance by designing a new service for a target of consumers in a new market and later by lowering the prices in the existing market (Yu Dan & Chieh, 2008).

The concept of disruptive technology has also been widely used as synonym of disruptive innovation, however the later has gained more terrain. The rationale for this is because a market disruption is not necessarily caused by a new technology but on how this technology is applied. New technologies do provide a sustaining innovation, however a change of the entire market is made only by disruptive innovations. A clear example is the first automobiles which although its high-tech level for those years, it didn't change





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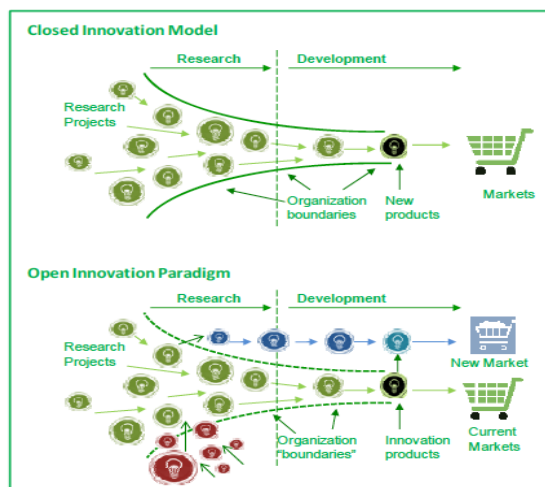
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the market of transportation as it was too expensive to afford one of these new vehicles. The disruption of the market happened until Ford started mass-producing its Model T, which provided an affordable automobile to society. Thus, the assembly line as a process to manufacture vehicles was the disruptive innovation (Christensen, 2003).

More modern examples of disruptive innovations are the USB-Flash vs. Cloud computing, CDs vs. free music streaming, postal mail vs. email, traditional photography vs. digital photography, traditional encyclopedia vs. Wikipedia, and so on. The examples clearly show that although technology could be present in disruptive innovations, it is not a must for disrupting a market and creating a new one. In the same way, disruptive innovations are not necessarily only on products, but can also involve services.

Another approach widely used to innovate nowadays is the open innovation model (Chesbrough, 2003) which stressed the importance of using external ideas and profit from them. Chesbrough and Crowther (2006) suggest that in the last years there is practice of a more open model where companies are aware that not all good ideas will come from the interior and not all innovations created within the company can be successfully marketed internally. Gassmann (2006) also confirms that during the last decade stronger global competition has guided a higher knowledge sharing and collaboration between firm's innovation processes. Considering these phenomena, the open innovation model was conceived using ideas from traditional innovation management and improved to represent modern practices (van der Meer, 2007).





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Open Innovation implementation needs a different mindset as it implies the way people perceive an organization and its environment i.e. it requires a new culture (Chesbrough, Vanhaverbeke, & West, 2006). A clear way to explain Open Innovation is by comparing a model of closed or conventional innovation process and an open process, as seen in figure 1. On one hand, traditionally companies apply a process that limit the utilization of internal knowledge within the company and make no use of external knowledge; this paradigm is described as Closed Innovation model. On the other hand and in contrast, the Open Innovation model refers to combining internal and external ideas as well as inner and outer pathways to market to advance in innovation development. For a more complete list of organizations and applications where exchange and collaborations of open innovation process occur, please refer to Appendix 1.

## 2. Methodology

To understand how can start-ups founded by students can create disruptive innovations when using an open innovation perspective, the case of the firm Stu:Drive was chosen. This start-up was chosen for next reasons: i) it is a new small firm with less than 2 years, which is already successful, ii) the novelty of the business model used by the firm deserves attention by academia and practitioners, and iii) the access to internal and first-hand information about the conception phase was readily available, as one of the authors of this paper is co-founder of this start-up. But let's review briefly the popular and novel business model used by Stu:Drive.

Stu:Drive is the leading car sharing platform in the Balkan region in Europe. It provides the service to connect drivers who have empty seats with passengers looking for transportation. Most of the trips are long distance rides i.e. inter-cities trips, and thus by sharing long distance rides, the community of users of this platform is increasing the





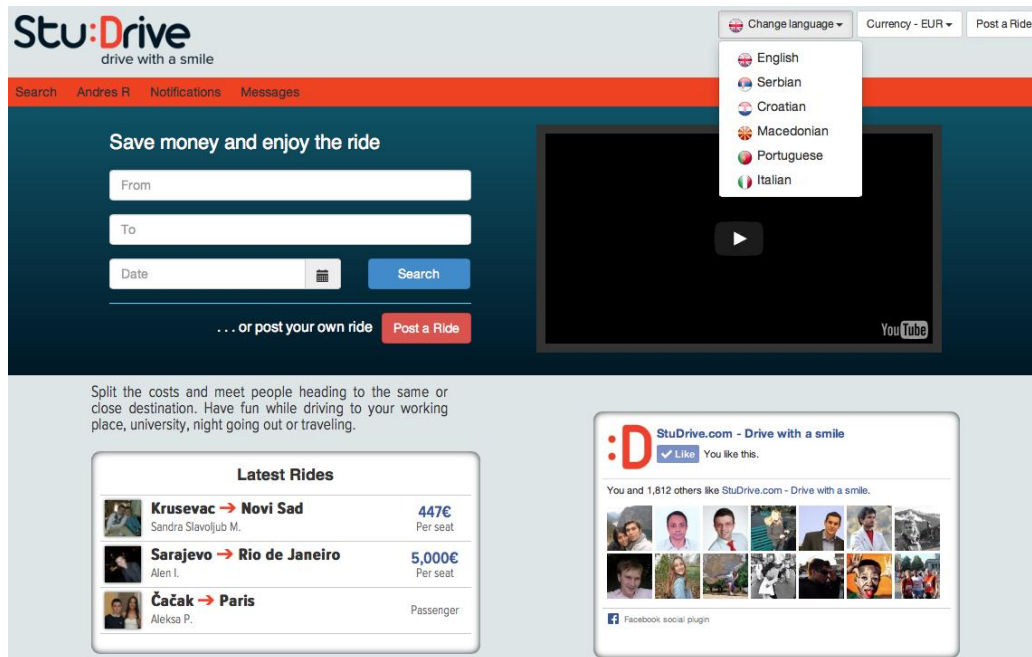
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efficiency of road transport, saving money on travel and at the same time reducing the impact on the environment. The model has proved to be a convenient way of travelling chosen by many daily users and in turn, the firm benefits from publicity and reputation.



**Figure 2.** Online platform of Stu:Drive with servers in Amsterdam, the Netherlands

Through a series of interviews and informal communications one of the co-founders was questioned about the details of conception phase of Stu:Drive. The idea for this start-up was initiated while some of the co-founders were studying their master's degrees in the Politecnico di Milano in Italy. Therefore, questions related to business incubators, student competitions, entrepreneurship courses, and other mechanisms that universities use to promote entrepreneurship intentions (see Table 1), were asked and analyzed. All the answers have been transcribed and stored for future reference and are not publicly available due to confidential information contained about the firm's business strategy.

### 3. Results and Discussion

The outcome of analyzing the case of Stu:Drive could be clustered in three main ideas: i)



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innovating through open and external sources of ideas, ii) creating disruptive innovations that matter, and iii) the contrast of Stu:Drive entrepreneurial macro level.

i) The original idea to start-up a firm like Stu:Drive was actually not through mechanisms that universities use to encourage entrepreneurial attitudes with a specific scope. This translates for example participating in any type of student competition. Nevertheless, the university environment did play a substantial in the conception of the initial idea. For instance, the 3 initial co-founders even if they have studied in different universities during their masters degrees, they both share the same bachelor's university. Networking, special courses, and workshops have probably shaped the way the nascent student entrepreneurs were thinking about creating a new business.

A milestone in this conception process was studying a Master's degree by two co-founders in a foreign country, which in turn provided a more open view about opportunities of new ideas and markets. In fact, the business model of Stu:Drive was replicated and improved from a similar firm, much larger, which is present in many countries of Western Europe. Thus it could be assumed that under a closed innovation model, this could be considered as a merely copy of another innovation. Nevertheless, under an open innovation model perspective, the argument is more flexible and positive. As we previously mentioned, to use open innovation involves obtaining knowledge and ideas from external sources and actors; therefore, the idea of Stu:Drive not only was used as a benchmark but also improved to suit the needs of the Balkans region.

Moreover, Stu:Drive's business model itself is a perfect example of a known application of open innovation. Considering that Stu:Drive is a car-sharing service fed by an open community of users where everybody is in a win-win relationship, it resembles the idea of crowdsourcing and other types of open innovation activities. Even though the co-founders may not have explicitly used an open innovation view to start-up their firm, it can be inferred from the way in which they obtained ideas from external sources in order to innovate a new firm, greatly relates to an open innovation model.

ii) Examples of known disruptive innovations might shown that only large firms are



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able to create this type of innovations, nevertheless if analyzing the theory it could consider quite the opposite. The theory says that while large and profitable firms might be innovative, their business environment does not allow them to attempt disruptive innovations (Christensen, 1997). This for the simple reason that a disruptive innovation might not be profitable in the beginning and this will imply that a large firm needs to allocate resources in this type of innovation when it could allocating the same amount to proven and profitable innovations (Christensen, 2003). On the other side, small new firms have nothing to lose and while their resources are limited, the search for a disruptive innovation can be actually the only way to obtain a profit from the market. This translates in considering that small new firms could be thinking about creating its own market even before entering the existing one.

Furthermore, as start-ups need to clearly differentiate from the rest, small or large firms, in order to survive the death valley of new failed firms, we noticed that Stu:Drive not only aimed to create it's own market but it targeted to propose something valuable in different dimensions. As we have mentioned, the idea of car-sharing not only involves economic benefits for all parties, but also lowering the environmental impact of the way people travel. Moreover, the social dimension is also part of Stu:Drive value proposition as the idea of sharing the car (and its cost) implies making a social network and using the service as a fun activity. This is expressed in its logo and slogan with a 'smile' shown in figure 3.



**Figure 3.** Logo and slogan of Stu:Drive

Therefore, Stu:Drive is a very good example of applied sustainable development or sustainability start-ups (Hockerts & Wüstenhagen, 2010). In practice this type of firms are also called with the concept of “triple bottom line” or TBL, which are firms that cover properly economic, social and environmental concerns. The three bottom lines together are often paraphrased as "Profit, People, Planet", or referred to as "the three pillars". Likewise, concepts like collaborative design for social and environmental



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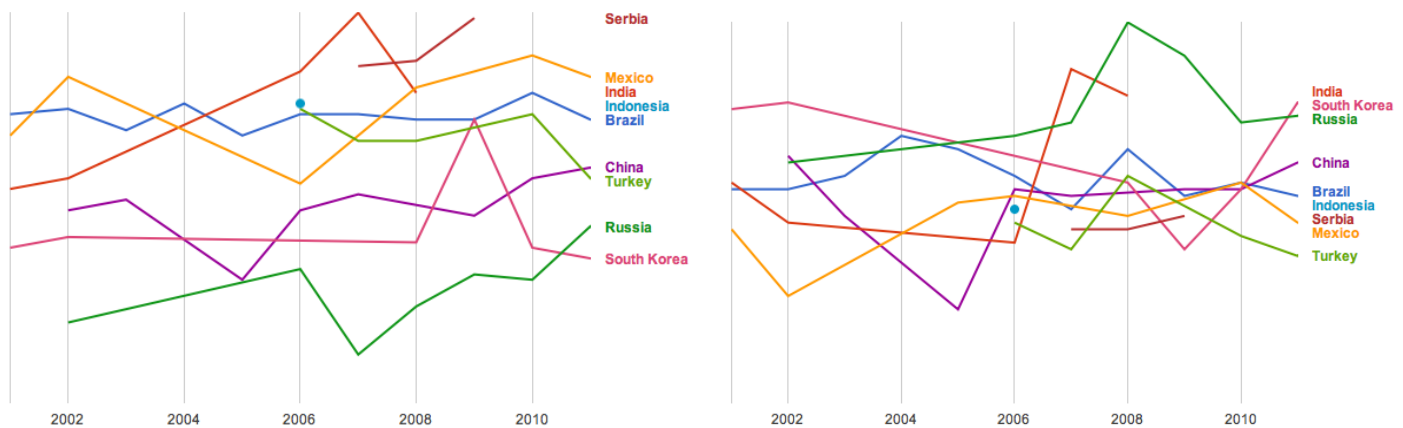
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entrepreneurships could be used to describe Stu:Drive profile.

iii) Out of the initial scope but interesting to mention is the overall entrepreneurial intention compelled by a culture. For instance, the notion that the co-founders of Stu:Drive after deciding on the idea to create the firm, actually gave a step further and implemented it makes a difference between entrepreneurial plans and action. They consider they already knew the idea, the opportunity was clear for them as they had the tools and abilities, and almost all the team, so they took the opportunity and exploited it. Therefore, could the same business model as Stu:Drive be replicated and adapted to other countries as e.g. Mexico? To provoke some debate, we have taken data from the website of Global Entrepreneurship Monitor (2013). We selected the country of origin of the initial co-founders i.e. Serbia, together with emerging economies from two known groups: BRIC (Brazil, Russia, India, and China) and MIST (Mexico, Indonesia, South Korea, and Turkey). The graphs in figure 4 contrast the perceived capabilities to have the knowledge to start a business against the fear of failure when starting up a business.



**Figure 4.** Perceived capabilities versus perceived fear of failure (GEM, 2013)

#### 4. Conclusions

In this paper we have reviewed the case of Stu:Drive a successful student start-up that has created a disruptive innovation in the transport industry in the Balkans and created a



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new market. Through analyzing information provided by one of the co-founders we suggested that using an open innovation perspective to obtain ideas and knowledge from different and external sources might be a possible option to replicate Stu:Drive success. The implication of this paper, includes the suggestion to academic institutions to promote an open innovation perspective in their students to the same mechanisms used to promote entrepreneurial intentions, and in this way, the reinforcement of creating innovations and new firms might have a higher impact. In addition, we noticed in the graphs in figure 4 a good panorama for countries with populations with high perceived capabilities, which might be an effect of the role of universities in society. For instance, Mexico (yellow color) has the highest perception of capabilities to start a new business in comparison to other emerging economies and its fear of failure rate to start a business is also lower. Therefore, it is clear that people are willing to start a new business. However, they need some support, and we believe universities are part of the organizations that can provide them, not only to students but also to other populations sectors.

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## Appendix 1. Open Innovation Matrix

The matrix of Open Innovation (Ramirez Portilla & Novokmet, 2010) includes the applications of an open innovation model, as well as the potential innovation actors. All of these include examples to better understand its differentiation. It needs to be noted that in the sixth row categorizing the principal actors in Open Innovation it shows Academic Institutions as a possible orchestrator of open innovation projects.

Applicable Elements in Open Innovation Innovation support in WHAT							Open Innovation Levels <sup>3</sup>
	Products E.g. differentiated and new products.	Services E.g. Branding and Marketing.	Technology E.g. Design and development.	Knowledge / Processes E.g. Sales tactics, licensing.	Projects E.g. social and sustainable projects.		
<b>Principal Actors in Open Innovation</b> Open Innovation with collaboration of WHOM	<b>Suppliers / Subcontractors</b>	P&G Pringles Chips Apple Ipad - originally by external catalyst	P&G CreateInnovate - Design of new packages	Nokia Innovent Emerson sharing system	Calgene biotechnology Boeing Dreamline Supply Chain - FAILED <sup>2</sup>	Kelloggs sustainability projects	Level 1. <b>Individuals</b>
	<b>Customers / Clients / Users</b>	Dell Ideastorm Danone new flavours Lego Mindstorms	Facebook open "apps" International Flavors and Fragrances design	Google Android apps Linux opensource policy	Yahoo Answers	Peugeot new designs competition	Level 2. <b>Firms and Organizations</b>
	<b>Competitors/ Strategic Partners</b>	Nissan - Peugeot Dell involvement with suppliers	Sky Team/ One World T-mobile communication network	Netflix - LG Electronics Cisco alliances and tech incubator	Internet Home Alliance IBM - "Ventures in Collaboration"	Dossia - Employees with portable electronic medical records	Level 3. <b>Dyads and alliances</b>
	<b>Employees / entrepreneurs</b>	3M innovation culture P&G innovation system	IBM trials demos DuPont technology bank	TopCoder - programming competitions DuPont technology bank	P&G InnovationNet IBM open improvement	Starbucks Social Network proposal@intel.com	Level 4. <b>Inter-organizational Networks</b>
	<b>Specialized Community (e.g. researchers)</b>	P&G Connect and Develop Eli Lilly - Innocentive	IBM open source and free software policy.	Sun Microsystems Philips High Tech campus and MiPlaza	Eli Lilly - Innocentive Eureke medical DuPont technology bank	Artistshare - Fans funding new artists	Level 5. <b>National / Regional Innovation systems</b>
	<b>Academic Institutions</b>	Electrolux Design Lab Novartis Nokia Beta Labs	Science Commons - generic license agreements	Nokia Research Centre Intel Labs Europe	iBridge Network - platform for university innovation	ITESM Enterprise Incubator	
	<b>Government / Agencies</b>	NASA open innovation culture (ongoing)	E-Government British Citizen Engagement	Vinnova.se Intel Labs Europe	New Zealand Police Department	Vinnova.se Calgene biotechnology	
	<b>Community in General</b>	Threadless T-shirts Danone New products Nike / Converse	Idea4all.com Coca Cola - Bottle design	Ninesigma - technology problem solving	IdeaConnection Yet2.com Ideawicket	Misha Cosmetics The Crowdfund Company	

- Notes:**
- 1 - Most of the examples were taken from the Open Innovation examples list available in the Appendix
  - 2 - Refers to Boeing failed attempt to implement Open Innovation in its Supply Chain.
  - 3 - Open Innovation units of analysis proposed by Chesbrough et al (2006) to be considered when investigating the model