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The Impact of Co-creation in Design Thinking for Social Innovation: The case of OpenIdeo

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Abstract

Innovation as a tool for creating value for companies stands as the first goal for managers in this competitive world we live today. Design Thinking (DT) has brought the attention of both academics and practitioners as a powerful methodology to connect with human needs and behaviour.

The growing awareness of confronting and answering to social world problems has also positioned DT as influential instrument to grow and allowing social innovation (SI) to emerge.

Co-creation (CC) transformed the social system that organizations and consumers interacted. Today, institutions promote experiences that better suits the needs of the individuals, with the goal of producing better products and services.

Co-design (CD) refers to the methodology of applying co-creation techniques to the DT. It adds value to this innovation process as it enforces the idea of experience between the users/producers.

Relevant to this phenomenon, is Internet. It has shaped the large community of users as individuals worried with the difficulties world faces nowadays. This community creates new meanings everyday and introduced the notion that we as humans can design artefacts collectively.

This research investigates the committed role of a specific online platform to form a community to solve world challenges, by the implementation of a design thinking methodology. The mission of this dissertation is to understand what occurs when a group of individuals co-create for social innovation, and what can we learn from this interaction.

Key words: Design Thinking, Social Innovation, Co-creation, Co-Design

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Glossary

Artefact – Artificial product; something made by human beings**.**

Methodology - A body of practices, procedures, and rules used by those who work in a discipline or engage in an inquiry; a set of working methods.

Process - A series of actions, changes, or functions bringing about a result.

Wicked problem - Is a phrase originally used in social planning to describe a problem that is difficult or impossible to solve because of incomplete, contradictory, and changing requirements that are often difficult to recognize.

1   Introduction

Nowadays organizations seek different strategies to add value and competitive advantage. Innovation appears to be the decisive approach to differentiate and pursue success. In the beginning of the XXI century, innovation has taken a fundamental role in all sectors of economic activities, raising the awareness of questions such as "which are the key-factors to manage innovation" and "what is the importance of innovation in organizations". Developing suitable strategies is an indispensable mission for the future of organizations.

DT is an emerging methodology, implemented in companies to increase innovation and change the managerial bias. It has brought the attention of academics in the research of Design methodology and of managers as an instrument to answer to consumer and market needs.

The basis for DT is problem solving, team effort and collaboration.

This innovation approach was settled by a group of designers and engineers in Palo Alto, California in the seventies. David Kelly, the founder of the design consultancy firm IDEO, was one of the first entrepreneurs developing design solutions to problems. His conduct and method is nowadays being implemented by different companies and also transported to universities.

DT focuses on human centered design and it is supported by a multi-steps process with the goal of creating products and services.

Since DT stresses the importance of answering to complex problems, organizations started to be interested in sorting social and world issues, beginning to position these problems as real challenges for the design world.

Another emergent phenomenon in the market is the concept of co-creating value with consumers, formulated by C.K. Prahalad and Venkat Ramaswamy. These two authors (2000) express the arrival of a new market, where consumers are the source of competence for the companies, which are moving to a forum where people have a crucial role on creating value.

Organizations want to know their customers, they want to match their needs and better interact with their behaviour. Relevant to this dissertation is the emergence of an online community interested in creating products all over the world. Organizations are seeking in their strategies to deal with this phenomenon. A survey by the company Cisco in 2009 concluded that 69 percent of their workers said their productivity was

higher when they worked distantly and 83 percent said their communication with other team members was either unaffected or *enhanced* by being dispersed. Other research led by Frank Siebdrat (2009) assessed the performance of 80 software companies around the world and found that more dispersed teams often outperformed "co-located" teams. A benchmark study by Board of Innovation in 2011, analysed 20 online platforms for co-creation. This research examined the relevance of the different platforms, and pointed the level of interaction, impact and revenue of each one of them. Other indicators for these study where topics such as the type of rewards used and the process phases. OpenIdeo and Quirky platform had a high co-creation interaction with better revenue and a wide scope. Since the goal of this dissertation is the impact of co-creation experiences in DT, the platform better suited for this research was OpenIdeo.
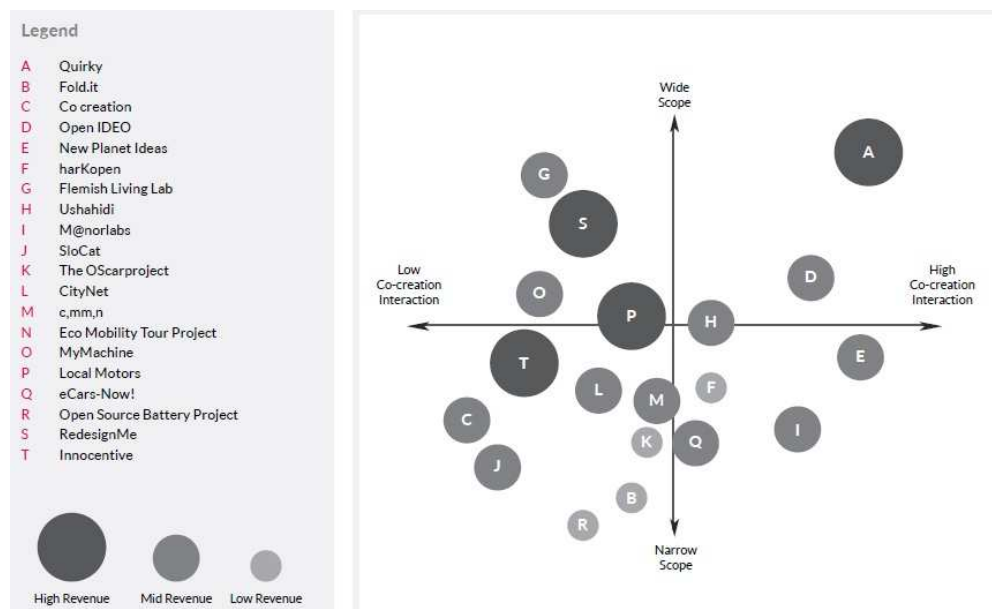
Figure 1 – Online platforms for co-creation.

This new theory could have a fundamental role in innovation methodologies such as DT. A latest research in Stanford University (Plattner, 2012) urges for the relevance of CC as a decisive feature in the technologic and social field of DT.

1.1 Research Background

Nowadays, the level of published papers, conferences and symposiums in CC and DT reveal the growing interest in innovation by researchers and academics. How can

managers interact with their customers and together create value seems to be the main questions to investigate.

Scientific journals such as the International Journal of CoCreation in Design and the Arts or the Journal of Consumer Culture advertise the advent of this phenomenon and the need for explorations in this field.

The author believes that studying how to determine solutions for real issues all over the world has a big impact in the society, so this dissertation is also an interesting study about SI and how DT may have an important role to aid these issues.

Besides all of this, some topics are not explored yet and the real impact of co-creating in Design is not yet revealed.

1.2   Problem Area and Purpose

The purpose of this dissertation is first to clarify what co-creation brings to DT Methodology, clarifying the concepts of DT and CC and later advocating a concept that is Co-design. Some papers and studies (Plattner, Meinel & Leifer, 2012; Badke-Schaub, Roozenburg & Cardoso, 2012) have a narrow scope when connecting the two concepts. There are also some misconceptions and various definitions about the phenomenon. It is also difficult to recognise how DT contributes for SI.

By investigating a case-study that performs the relation between the two concepts, the goal is to provide some conclusions and principles for practising this methodology on social innovation.

1.3   Problem Definition and Research Questions

As a process stimulated from collaboration with different individuals, with different backgrounds to pursue a common goal, DT is fundamentally a methodology of collective intelligence. The importance of creating knowledge together seems to be the dominant topic for creating experiences, products and services. Despite the growing concern of this theme, little is known about the process of creating together, the roles of each participants and how collaboration between individuals can enhance the

solutions (Sanders & Stappers, 2001). Based on the case of OpenIdeo, the research question for this dissertation is:

What is the impact of CC on DT for SI?

1.4   Delimitations

In the vein of what was said in the beginning, the mission was to understand how the process the co-creation affects the design thinking methodology. Due to the limitations of time and resources, it was decided a single case-study. The analysis of the case study had the objective of understanding which are the most important tools for CC, and which key-elements are essential for a successful solution.

1.5   Dissertation Outline

The thesis outline explains all the chapters from the dissertation (figure 2).

The first chapter introduces the first notions about the topics of the investigation.

The second chapter describes DT and CC phenomenon, and compiles the theory beyond the two innovative methodologies. The author connects the two concepts and presents the problem resulting from the literature review.

Chapter three reviews the methodology employed to pursue the dissertation goals. Thus is presented the research strategy applied on the case study.

The chapter four displays the case of Open Ideo and the empirical findings collected throughout the study. Later the author summarises the remarks and findings from the investigation.

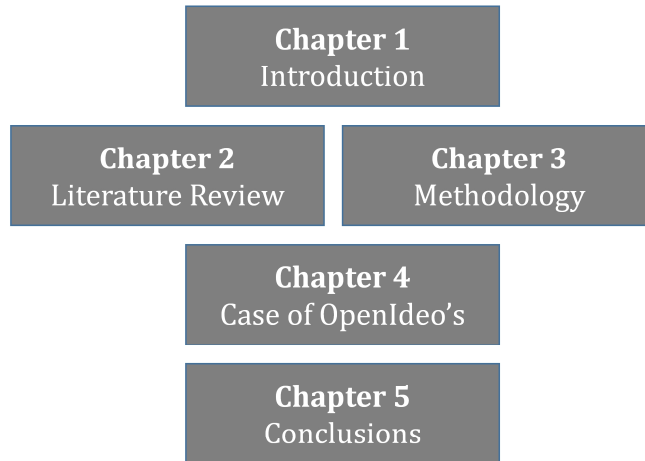Chapter six describes the conclusions of the research, issues occurred and some topics for future research.

| Chapter 1 |
| Introduction |

| Chapter 2 | Chapter 3 |
| Literature Review | Methodology |

| Chapter 4 |
| Case of OpenIdeo's |

| Chapter 5 |
| Conclusions |

Figure 2 – Thesis Outline

2   Literature review

This chapter aims to describe DT and CC phenomenon, and precise the history beyond the two innovation process. The author connects the two concepts and in the last chapter presents the problem resulting from the literature review.

Nowadays innovation is essential for organizations to pursue value creation. In this situation industry has increasingly turned to creativity-intense professions like design and art in search of clues on how to revitalize innovation (Jahnke, 1999). Design is one of the activities more associated to the creation of new possibilities, aiming to accomplish innovation. So it is essential to analyse how designers think and to identify a closer methodology of DT.

2.1   Design Thinking

In the last four decades different authors and academics studied and reviewed the activity of design. The talks in the *The Design Thinking Research Symposium*, an initiative started in Delf (Netherlands) in 1991, allowed and promoted the research on this issue. It was Peter Rowe the first to use the name DT in his book about the research on design (Rowe, 1987).

The term DT was instigated by other authors like Lawson in the 80's and continued with Cross and Schön (1983). Lawson gathers innovation as an inherent aspect of the design process (Lawson, 2006). The approach of Schön was classifying design with a 'reflection-in-action' type of attitude, which distinctions with an over-focus on techniques and rationality (1983).

Serrat (2010) determines that DT is about using the sensibility and methodology which allows designers to create new ideas, new alternatives, new choices and new viabilities that satisfy the stakeholder needs. For Martin (2009) the primary goal of DT is disruptive innovation to gain competitive advantage on the global market. "It is an emergent theme that attempts to provide a pragmatic framework for dealing with complex thinking in designing solutions to problems: be they architectural, technological, and increasingly social and organisational."(Pitsis, 2011).

Different perspectives over the DT concept have encouraged to locate a tangible definition. DT, as a perception, has been slowly evolving and coalescing over the past decade. Dorst (2009) and Visser (2006) pointed that DT has gained the position of a paradigmatic concept describing design-specific cognitive activities that designers apply during the process.

Investigation in the field has been associating the perception that DT is an innovative process of thinking - it is in many ways, the contrary of scientific thinking (Owen, 2007). Scientific thinking relies on assumptions related with facts – contrary to scientific thinking is, the knowledge processed in DT which has not to be neither representative nor entirely rationalized. Therefore it serves to obtain an exemplary and multi-perspective understanding of a problem, to creatively transform it in a solution for the ambiguity of wicked problems (Lindberg, Gumienny, Jobst and Meinel, 2012). The concept is evolving thanks to the new knowledge created and the theoretical development that delivers new ways or explanations (Badke-Schaub, Roozemburg & Cardoso, 2012).

DT is a complex thinking practice that can be systematized in two concepts: Abduction and Bisociation (Jones, 2012). Neumeier (2010) argue that designers do not solve problems. Instead, they work through the problems, using an abductive process. Abduction is a cognitive act of DT and has been defined as seemingly unrelated facts brought together by an intuition of connectedness that results in a hypothesis – the inferred "explanation" of the facts. The other concept attached to this is Bisociation, which is the centre of the creative acts of the human mind (Koestler, 1970, p. 36). These creative acts arise from a collision between two matrices of thought or behaviour (Jones, 2012).

2.1.1   Design and Thinking – The History

The first findigns in DT unlocked the debate on our behaviour as thinking characters. The studies of Alex F. Osborn on brainstorming (1939), provided insights on the behavioural aspects of thinking. The initial approach of Herbert Simon, with the book Science of the Artificial (1969), introduced the process of thinking in design and problem solving.

The process of explaining DT was done primary by the people working in the design sector. In fact, it has already been more than forty years since practitioners in engineering design established the first methodologies, which aimed supporting the design process, and consequently, the development of innovative products (see for example Kesselring, 1954; Pahl & Beitz,1984).

The investigation behind DT isn't only supported by design discipline and academics. Research on DT has been carried out by different disciplines, each one not necessarily taking into account the broader picture. Researchers in cognitive psychology, for example, have a different interest in design thinking compared to computer scientists (Badkr-Schaub, Roozenburg and Cardoso, 2012).

Design and DT are concepts that are familiar but have different idiosyncrasies, thus it is fundamental to examine the differences between the two.

2.1.2   Buchanan Design Matrix

Design is a complex activity in human lives since the beginning of times. Design research history has come up with different definitions to conceptualize what is Design and why it is so relevant to our lives. One of the concepts of design, established in the academic community, is from Richard Buchanan (1992). "Design is the human power of conceiving, planning and making products that serve human beings in the accomplishment of their individual and collective purposes." (Buchanan, 2001)."Product here is defined by being a negotiation of the intent of the designer and manufacturer and the expectations of communities of use." (Buchanan, 2001).

Buchanan identified a matrix to explain the framework under DT. He divided design in four broad areas: communication (signs and words) construction (things), strategic planning (action) and systemic integration (thought). The purpose of this matrix was to conceive a heuristic device for investigating the "shifting" debate about design in the contemporary world (Buchanan, 1998).

	Communication **Signs and Words**	Construction **Things**	Strategic **Planning; Action**	Systemic **Integration; Thought**
Inventing	Signs, symbols and images	⟶	⟶	⟶
Judging		Physical Objects	⟶	⟶
Deciding			Activities, services and processes	⟶
Evaluating				Systems, environments, ideas and values

Table 1 - Buchanan's matrix (Buchanan 1998, p.13)

The matrix (table 1) created by Buchanan, evolves in Four orders: first and second order – which is inventing and judging, the third order – deciding and the last one, evaluating.

Designing is a complex activity. "It is a paragon of a highly complex functional capacity in humans because it entails the capability to mentally imagine and plan out a material artefact de novo in the absence of any prior sensing or knowledge of that artefact."(Dong, Collier-Baker and Suddendorf, 2012). In fact we observe that design has moved into designing actions and environments (Buchanan, 1995).

2.1.3   The Process of Design Thinking

DT is described as a complex endeavour, which is described by a numerous parts – problem solving, diverging/converging thinking, visual thinking, empathy, prototyping and heuristics.

For Simon (2006), problem solving is often described as a search through a vast maze of possibilities, a maze that describes the environment and design as the changing of existing conditions into preferred ones. The influence of the environment and the process of thinking characterize the ambiguity of a closed concept on DT. It is a process about innovation so, it's clear that it is always changing.

The basic principles of problem solving are problem and solution space and diverging/converging thinking. (Lindberg, Gumienny, Jobst and Meinel, 2012).

Problem and solution space refers to the representation of possible solutions in the problem space itself, without regarding a separate solution space. Martin (2009) also

mentions DT related to problem solving: the mental processes they use to design objects, services or systems, is different from the end result of elegant and useful products. DT results from the nature of design work: a project-based workflow around "wicked problems" (Dunne & Martin, 2006, p. 517). Also he states that it is equally relevant for designing products and spaces, as to the design systems or dealing with abstract problems such as services.

Observation plays a key role on the design thinker performance. "It has to understand the information first hand by observing people in real situation with a mind-set of empathy, looking to understand human behaviours and emotions." (Cahen, 2008).

Empathy is critical and it is about understanding somebody's goals, the way of thinking and "what procedure and philosophy he follows to accomplish them" (Young, 2008, p. 2). Heuristics offers a good understanding of this specific type of thinking: "there are strategies using readily accessible, though loosely applicable, information to control problem solving in human beings and machines" (Pearl, 1983). The concept explains how people make decisions when facing complex problems or incomplete information.

Visual thinking is a critical part of design and DT. It is a 'meta-strategy', a fundamental way of thinking (and a major alternative to other ways such as verbal thinking). Included under visual thinking are the three interactive strategies of thinking by seeing, imagining and drawing (McKin, 1972).

DT is inherently a prototyping process: "once you spot a promising idea, you build it, in a sense, we build to think" (Brown, 2008). These innovative idea of thinking centres prototyping as a fundamental tool for designing.

Prototypes are representations of a design made before final artefacts exist (Buchenau & Suri, 2000). These authors also say that they are created to inform both design process and design decisions, ranging from sketches to different kind of models. The idea of experience is fundamental for the process and vital for the success of the projects. "Traditional prototyping techniques and tools are embedded in traditionally distinct design disciplines." (Buchenau & Suri, 2000).

Industry has taken further the development of prototyping. Several groups of designers and researchers, most notably at Apple Computer, Xerox Parc and Interval Research, have been active both in pushing the boundaries of prototyping beyond the range of traditional methods (Burns, Dishman, Johnson and Verblank , 1995).

Lindberg, Gumienny, Jobst and Meinel (2010) characterized DT in three features (table 2): Exploring the problem space, exploring the solution space and iterative alignment of both spaces.

Exploring the problem space	Observing scenarios to understand
Exploring the solution space	Prototyping different ideas
Iterative alignment of both spaces	Stimulate environment and connect the team behind the creation

Table 2 - Exploring DT

DT emphasises strongly on problem-related learning and adaptive concept creating to be constricted in a uniform process (Lindberg, Gumienny, Jobst and Meinel , 2012)

As we can see, trying to classify and explain DT process is multifaceted and endeavouring task. There is a need for a comprehensive model that guides learners through project-based learning lessons (Lindberg, Gumienny, Jobst and Meinel, 2012). The process of designing extends to all the activities put together to solve a certain design problem. These activities are framed as experiences to pursue a possible solution. Martin (2009) has argued that DT is a collaborative methodology that builds on complementary, multidisciplinary experiences. So what can be described as an experience in DT?

"Experience is a very dynamic, complex and subjective phenomenon." (Buchenau & Suri, 2000). The process is iterative and tends to be improvisatory. "It is an engaging activity that can also be understood as a prototyping technique, where participants can express notions and feelings that are otherwise not very accessible or possible to articulate in a more conventional setting." (Taylor & Ladkin, 2009). Critical to this experience is the perception of working with a team and the notion of collaboration. Collaboration plays a central role in the sociology of DT (Jones, 2012).

DT is entirely about focusing in the human behaviour and his desires. "Designers operate with a focus on form and function, without regard for broader concerns such as human experience." (Buchanan 2001).

Human centered design distinguishes itself from other product development methods by its emphasis on user research (Junginger, 2005).

Human centered design is at the core of interaction design. "Interaction design is fundamentally about how people relate to other people, and how products mediate those relationships" (Buchanan, 2004). It is based on the physical and psychological needs of the human user, enabling the user to function at the highest level possible. "It is a

process for designing and developing buildings, products and communities that is grounded in information about the people who will be using them." (Brown, 2008)

2.1.4 Design Thinking for Social Innovation

DT is a methodology for innovation which appeals to complex problems, such as global problems - poverty, urban crisis or lack of education. Today several leading companies are beginning to find inspiration in an unexpected place: the social sector— in public schools, welfare-to-work programs, and the inner city. (Kanter, 1999).

The message here is that overtaking social issues will have a fundamental impact in the environment which organizations are held. They have learned that applying their energies to solving the chronic problems of the social sector powerfully stimulates their own business development. (Kanter, 1999).

A study by the Designing Out Crime (DOC) from the University of Technology of Sidney realized that DT has a great impact in helping crime prevention; by integrating the idea of reframing: "reframing is important to the success of design outcomes in the field of designing out crime and is the key aspiration at DOC." (Duarte, Lulham & Kaldor, 2011). DT could have an enormous impact in solving this specific issues: "in this approach, flexible, creative collaborative design processes are ever increasingly recognized as being critical to the developement of effective solutions to complex problems such as crime." (Sanders and Stappers 2008).

2.2 Value Creation

When people imbue products with their own labor, their effort can increase their valuation. (Norton, Mochon & Ariely, 2010)

Value Creation is the performance of actions that increase the worth of goods, services or even businesses. The context of value creation is as important to the creation of value as the competences of the participating parties. (Vargo, Maglio & Akaka, 2008). Also the changing nature of the consumer-company interaction is the essence of CC of value (and co-extraction) redefines the meaning of value and the process of value creation. (Prahalad & Ramaswamy, 2004). In a traditional approach the company

controlled value creation. The interactions between companies and costumers are not seen as a source of value creation (Normann & Ramires, 1994; Wikstrom, 1996).

2.3   Co-Creation

Today, the world faces the emergence of a knowledge created collectively. Collective Intelligence is about the cognitive contributions of many people and offers a potential to magnify design cognition in similar ways to the brain functioning, drawing upon many neurons (Murty, Paulini and Maher, 2012). These authors explored five sets of requirements to a successful development of applications based on collective intelligence: communication, representation, motivation, guidance and self-organisation (2012). Levy (1997) theorized the concept of collective intelligence as the phenomenon who arises from the collaboration and competition of many connected individuals. CD is defined by a social activity involving the interaction of many groups of people. (Paulini et al, 2012). It is associated with the effect of Internet applications that allow anyone to contribute like Wikipedia, Quirky, etc.

A new paradigm has emerged on consumer culture and with a great impact on management and marketing strategies. CC is a process which includes the procedures, tasks, mechanisms, activities and interactions, which support the co-creation of value. (Payne, Storbacka and Frow, 2008); it positions today as the response to the energetic and dynamic market of consuming goods, services or experiences. Today, customers can engage in dialog with suppliers during each stage of product design and product delivery. This form of dialog should be seen as an interactive process of learning together (Ballantyne 2004).

It is a new practice that positions in the same hierarchy the organization who creates the product and the person who uses it. CC is active, creative and social process based on co-operation between producers and users. It is a collective process of making a way together.

Drucker and Levy in the 50 and 60's defined the importance of the consumer to the companies – the primary challenge of the firm is to identify and respond to consumers market needs and desires (see e.g. Drucker, 1950; Drucker, 1954; Levy, 1959).

Since the beginning of goods trading, the companies tried to reach consumer needs and behaviours. With the goal of reaching inside of consuming behaviour, co-creation of value is a desirable strategy as it can assist firms in highlighting the customer or

consumer's point of view and in improving the front-end process of identifying customers' needs and desires (Lusch and Vargo 2006). This emerging model has its academic background in disciplines such has marketing, management and design.

Research in co-creation has been reviewed by Bendapudi and Leone (2003) , Prahalad and Ramaswamy (2004). The last two, in their book *The Future of competition: Co-creating Unique Value with Consumers* (2004), reviewed the knowledge of co-creation delivered some of the most important articles about the concept.

Prahalad (2000) specified the importance of the consumers with the market – consumers moved out of the audience to go onto the stage - they are fundamentally changing the dynamics of the marketplace (1); the market became a forum in which consumers play an active role in creating and competing for value (2). Professor Frank T. Piller, from RWTH Aachen University, an expert in technology & innovation management, has also several publications around co-creation and their characteristics such as mass customization, user and open innovation.

Dialogue	**Access**
Transparency	**Risk Benefits**
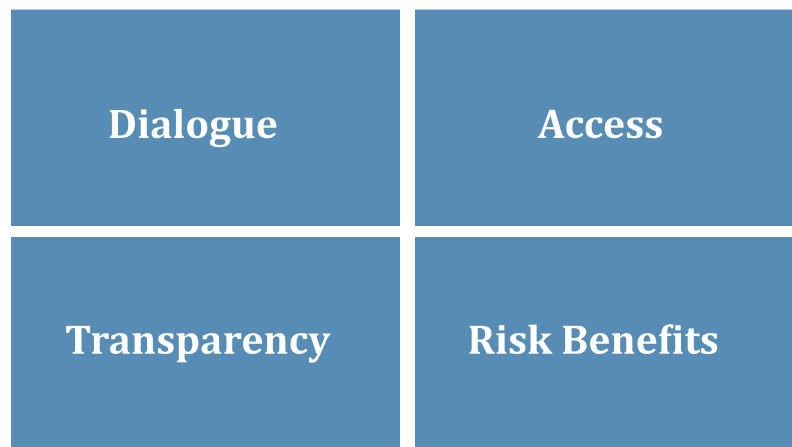
Table 3 - Prahalad Dart Model (2004)

2.3.1 The DART Model Of Co-Creation Of Value

How can we create a system for co-creating experience? Dart model (table 3), proposed by Prahalad (2004) is the basis for interaction between the consumer and the firm. "The Dart model stands for Dialogue, Access, Risk Benefits and Transparency and focuses on the interactions between the individual costumer and company, and on generating outcomes of value for individuals." (Ramaswamy and Guoillart, 2008).

Dialog is a essential for co-creating. As Levine, Locke, Searls & Weinberg referred (2001), markets can be viewed as a set of conversations between the consumer and the firm.

"CC converts market into a forum where dialogue among the consumer, the firm, consumer communities, and networks of firm can take place." (Prahalad and Ramaswamy, 2004).

For marketing, CC is the facilitator and 'structure' for mutual creation and enjoyment of value is gaining credence. (Lundberg & Pitsis, 2010).

Marketing, studied by consumer researchers (e.g., Holbrook and Hirschman 1982) emphasized emotions, contextual, symbolic and non-utilitarian aspects of consumption (Arnould and Thompson 2005). Holbrook (1996) defined consumer value as an 'interactive relativistic preference experience', i.e., the argument is that experience defines what is valuable to a customer.

CC is a very broad and intricate concept. It has applications ranging from the physical to the metaphysical and from the material to the spiritual, as can be seen by the output of search engines. (Sanders & Stappers, 2008).

CC is by now being touted at all points along the product development process, particularly in the later stages. (Sanders & Stappers, 2008). Ritzer (2004) studied companies like Macdonalds or IKEA and their approach to appropriate customer involvement in the creation. To Zwick, Bonsu and Darmody, (2008) co-creation is the driven to this new economy established by the need of capital to set up processes that enable the liberation and capture of large repositories of technical, social and culture competence in places previously considered outside the production of monetary value.

Also interesting to this subject is the work of behavioural economics and phenomenology research in collective creation. The investigators in behavioural economy studied the perception of people valuating the thing that they laboured (Norton, Mochon and Ariely, 2011). The "Ikea Effect" - which is the value of self-made products, suggests that when people imbued products with their own labour, their effort can increase their valuation. Phenomelogists contribute the everyday lives to exploring the ways in which humans co-create meanings, and how people act and interact symbolically through language, signs, symbols and artefacts of human interactions (Herbert-Mead, 1947). Also Psychotherapy analyse group decision-making with

techniques for creative play, exploring desires, identities and wishes' of the people analysed.

Management Academics also studied the inclusion of consumers in conception of commodities. In change management literature the appraisal of the involvement of stakeholders in change process is self-evident. (Lundberg & Pitsis, 2012)

The importance of integrating consumers in the course of the market is changing how companies and the industry were organized. Prahalad (2004) stated that "early experimenters are moving away from the old industry model that sees value as created from goods and services to a new model where value is created by experiences" (p. 172). Table 4 explores the modifications from experiencing co-creation.

Also there are in the last years, different strategies to help companies to co-create - a surprising lack of work directed at providing frameworks to help organizations manage the co-creation process. (Payne, Storbacka and Frow, 2008).

Exhibit 2 Migrating to co-creation experiences		
	Traditional exchange	*Co-creation experiences*
Goal of interaction	Extraction of economic value	Co-creation of value through compelling co-creation experiences, as well as extraction of economic value
Locus of interaction	Once at the end of the value chain	Repeatedly, anywhere, and any time in the system
Company-customer relationship	Transaction based	Set of interactions and transactions focused on a series of co-creation experiences
View of choice	Variety of products and services, features and functionalities, product performance, and operating procedures	Co-creation experience based on interactions across multiple channels, options, transactions, and the price-experience relationship
Pattern of Interaction between firm and customer	Passive, firm-initiated, one-on-one	Active, initiated by either firm or customer, one-on-one or one-to-many
Focus of quality	Quality of internal processes and what companies have on offer	Quality of customer-company interactions and co-creation experiences

Table 4 - Migrating to CC experience (2007)

The importance of recognizing customer processes rests with the need to develop a full understanding of where a supplier's offering fits within the customer's overall activities. (Payne, Storbacka and Frow, 2008)

2.3.2 Online Co-Creation

The advent of the Internet has facilitated new interaction in product development (Sharma and Sheth, 2004).

Several academics and even investigators in the internet, introduced different notions for the collaboration between the organizations and the consumers. Concepts such as Open Innovation and Crowdsourcing.

The term open innovation, devised by author Henry Chesbrough from the UC Berkeley is a system where innovation is not solely performed internally within a firm, but in a cooperative mode with other external actors (Chesbrough, 2003).

An important component of open innovation is the cooperation of ideas from vertical networks of customers, universities, start-ups, suppliers and competitors.

Open Innovation differs from CC because it focuses on acquiring technology during the realization stage; CC addresses the ideation of the products or services.

Crowdsourcing represents the act of the 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 it is also often undertaken by sole individuals (Howe, 2006).

There are today dozens of online platforms with co-design basis. The most relevant ones are Quirky.com, Fold.it, OpenIdeo and Ushahidi. It is an emerging application of collective intelligence that integrates online communities into innovation process (Paulini et al, 2012).

The importance of understanding the behavior of consumers and user of products is increasing by academic who study the design practice. Over the past six decades, designers have been moving increasingly closer to the future users of what they design (Sanders & Stappers, 2008).

Scrutinizing the effect of users needs in the design process is a matter of great review from academics interested in connecting user and producer. Designers can look

at user needs from various points of view, and understanding user needs is regarded as key to strategic thinking in user-centered design (Lai *et al.* 2010).

Some of the leading companies in the world began to recognise the influence of co-creation in the economy. Organizations like Nike, Lego and Procter & Gamble implemented several services to integrate consumer participation.

Lego developed a online community who facilitates personalisation and co-creation opportunities to his customers. Nike created NikeID to involve users to generate ideas about product improvements, including options fot the customisation of Nike products. In Proter & Gamble, consumers contribute to product development where they design new items and provide qualitative feedback). Also Ritzer (2004) detected the increasing rationalization processes of companies in a McDonaldizing world that have long relied on the appropriation of customer work.

2.4   Co-creation and Design Thinking: Co-Design

Co-Design is the collective creativity as it is applied across the whole span of a design process. (Sanders & Stappers, 2008). It can be described as a example of collective creation in the subject of design development process.
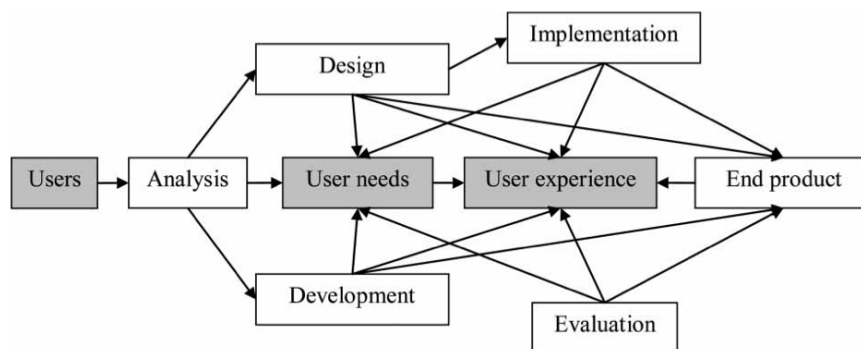
Figure 3 - The user-evolving collaborative design process (Park, 2012)

One question has aroused about participation in design practices. Are users just a subject for analysis or can they be active participants in the design decision-making process? (Lee, 2007).

The "realm of collaboration", a term coined by Lee (2007) refers to the new world where the two worlds, the professionalism and the subjects, before separated, re-join to a new form of in-between space.

Park (2012) introduced a framework for the collaborative design process. It shows the change of role of users in the creation process and it reveals the emergence of user needs in the process of designing. In figure 3 the compositive process focus on the progression of the users participation, not in the process (Park, 2012).

The inclusion of users in the design process has been labored in the last decades – this kind of collective creativity in design has been around for nearly 40 years, going under the name participatory design (Sanders, 2008).

The first time that user participation was addressed by the Design Research Society in the conference entitled Design Participation in 1971.

One of the articles that was significant to these matter was from Robert Jungk – "..We could talk not (only) about participation at the moment of decision but about participation at the moment of idea generation. We can begin the preparation for this radical change. (p.122 in Cross, 1972).

Involving end users in design has become an essential part in design process (Sanders 1996). Co-designing threatens the existing power structures by requiring that control be relinquished and be given to potential customers, consumers and end-users (Sanders&Stappers, 2008). Participatory design enables the inclusion of stakeholders who are not necessarily designers – and while expertise, specialized training and experiences are important resource, they are not a source of unchallenged power and authority (Schuler and Namioka 1993).

There are some characteristics of co-design: it is inclusive and encourages people across a vast range of backgrounds and experiences, to participate and contribute (Paulini et al., 2012).

There are two type of involvement of the user in the collective creation. One is the usually collaborative approach by companies like Ideo, who only integrates the user in a controlled procedure. ..Designers often construct an idea f the user based on limited introspectively available information and supplement this with strategic in-fills that give direction, coherence and apparent logic to the process (Whitfield, 2007).

There are different methods to analyze user needs: they are persona construction, surveys, interviews, observation, card sorting, group task, analysis, focus groups, field studies, user feedback testing, bug lists and expert consultation (Kinzie *et al.* 2002, Lai *et al.* 2010, Bredies *et al.* 2010).

Nowadays we also witness that customers are becoming not only co-innovators but also manufacturers, using open software provided by specialized companies, with creative commons license. This radical procedure allows users to transfer their ideas into producing without much experience. They can create their own assortments and also create a market for their creations. Examples of these companies are Zazzle, Ponoko and e-machineshop.

3   Methodology

3.1   Research Strategy

To answer to the research question of the present dissertation, methodological actions were established. The commitment of sustaining the relation of DT and CC with their scientific roots was the first premise to the investigation. It was used a case study model strategy to respond to the question of this research. Thus the focus is on exploratory analysis where the objective is to explore a phenomenon to try to identify important issues, constructs, or develop hypotheses (Marshall and Rossman, 1989; Yin, 1989).

All the research attempts to encourage the belief that DT is one of the most pertinent management methodologies from organizations to gain competitive advantage in the market. Besides that, the awareness that creating knowledge with all the participants (from producer to user) appears to remain nowadays the future of innovation.

The main goal, based on the theory that was reviewed, was to analyse the relation between the CC and DT. The methodology of this research tries to determine alternative practices of collaboration in design through a specific online design project.

There is a deep concern in management that organizations are evolving to *forums* where consumers and producers share the same responsibility to create products or services. Based on this discussion, the chosen case belongs to an organization that embraces as main philosophy, characteristics like tolerance, liberty and innovation and promotes collaboration between users and producers. Case study research is an empirical inquiry, in which the focus is on a contemporary phenomenon within its real-life context and boundaries between phenomenon and its context are not clearly evident. (Yin, 1984)

DT, with the ability to pursue and resolve "wicked problems" is a vital method to deal with problems such as lack of innovation in organizations.

Supported by the research in DT based on the publications of Buchanan (1992) and Dorst (2008) and the authors from CC such as Sanders (2009) and Piller (2000), it was examined the impact of collaboration techniques to support DT process.

To better observe and analyse the phenomenon all the requirements implemented. There was not any control on the study observation, since it is related to a past project.

To facilitate the understanding of the case study, it was presented the context of all the information gathered from the collected data.

The collected archival data is referred to an OpenIdeo project in 2012, and it was analysed qualitatively according to categories such as the roles of each contributor, the motivation in finishing the tasks, the level of collaboration and the impact of each project in real terms.

Research design links the collected data to the conclusions drawn from the initial question anticipated in this study – it provides a conceptual framework and an action plan in order to acquire from the questions proposed a set of conclusions (Yin, 1984)

Since online platforms are a contemporary phenomenon in a real-life context, the case study strategy was the most relevant approach for the research design. Also it is suitable for studying complex social phenomena (Yin, 1984). Case study is a research strategy, which focuses on understanding the dynamics present within single settings (Eisenhardt, 1989).

There are different types of analysis in a case study - they can employ an embedded design, that is, multiple levels of analysis within a single study (Yin, 1984).

The levels of analysis are: Exploratory, Descriptive and Explanatory. For the current dissertation it was considered explanatory analysis.Three more categories were described by Stake (1995): Intrinsic, Instrumental and Collective.

The base of this dissertation is the qualitative analysis. It has the objective of understand and discover a specific fact, a process or the perspectives and vision of people in the world (Merrian, 2002). Also this type of study implies a comprehension of an experience or event and it is guided by epistemological and ontological premises (Caelli, Ray and Mill, 2003). Qualitative analysis favours the sensitivity to contextual factors; the ability to study symbolic dimensions and social meaning; to develop empirically supported new ideas and theories. Qualitative researchers study things in their natural settings, attempting to make sense of, or to interpret, phenomena in terms of the meanings people bring to them" (Denzin and Lincoln, 2000).

Case study research is specific type of research and consists in: (a) an accurate rendition of the facts of the case, (b) some consideration of alternative explanations of these facts, and (c) a conclusion based on the single explanation that appears most congruent with the facts (Yin, 1981). Figure 4 shows all the steps of a case-study method, proposed by Yin.
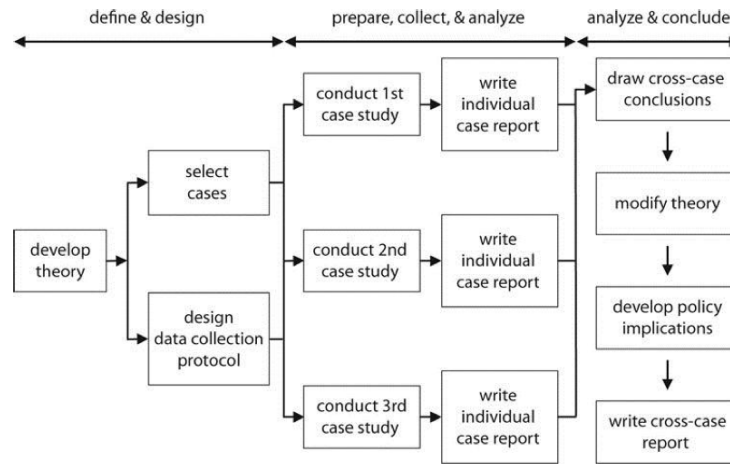
Figure 4 - Diagram of case-study method (Yin 2003, 50).

3.2   Case Study Selection

To better understand the communication between individuals, a project from OpenIdeo was the choice for analysis. The reason to choose OpenIdeo as the case were i) the relevance of the platform, ii) the reputation of the organization behind the project, iii) the documentation provided online with the access to all the processes, iv) the interest of OpenIdeo managers in the case study.

First of all, OpenIdeo is one of the most useful online platforms that use DT tools to generate new ideas to a variety of social problems. The amount of people involved is large and from different parts of the world. Also the level of interaction between users is high in this platform, giving to collaboration a central part of the process.

Second, online platforms are nowadays creating a large impact all over the world. Collective knowledge is the key factor for the emergence of this phenomenon. Trying to learn and systemize how individuals from different parts of the world connect and vision services and products together stands as a fundamental subject for a new world where every second new ideas are born.

Finally, co-designing puts users to contribute to solution generation, for instance, by participating in prototyping, storytelling or scenarios building (Vaajakallio & Mattelmki, 2007). It helps designers to generate ideas by providing insights and in elaborating design problems in a way it is most natural to them, i.e. through the visualisation language (Cantú & Rizzo, 2012).

The specific project chosen for analysis was "How might we restore vibrancy in cities and regions facing economic decline?" It was selected because the project was completed and the winning solution was implemented in February of this year, giving time to perceive the achievement.
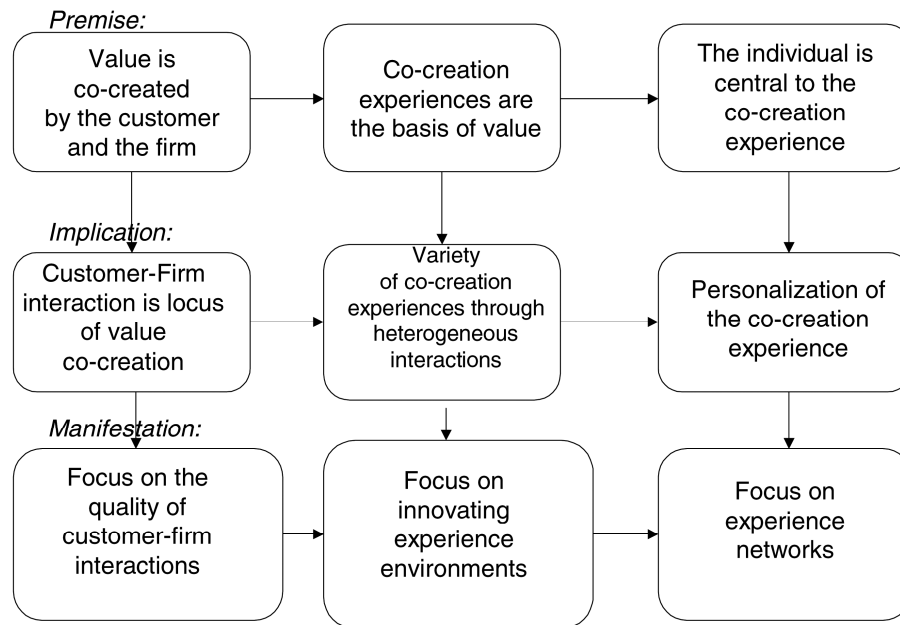
Figure 5 - Framework for co-creating unique value with customers, Prahalad & Venkaswami (2004)

3.3   Analysis Framework

Analysis framework is an established research technique allowing elucidation of social design processes (Cross and Cross, 1995).

The objective of the framework is to explain and describe how the author drove the data to obtain the intended results. A Case Study protocol was defined to analyse the interaction between the participants it was used the framework for co-creating by Prahalad and Venkaswami (figure 5). It helped to translate to the case-study all the elements in co-creating. Crucial was also the framework by Park (2012), as introduced in section 3.1. It was indispensable as a guide for analysing the process of co-designing. The framework by Park proposes some insights for interaction between individuals in design process. The author believes that this two frameworks are similar and respond to the research in co-creation in management and co-creating in design.

The Figure 6 shows the purpose of the dissertation, being the interaction between users and designers.

A series of interviews (10 interviews) were arranged to get the feedback of the users from the interaction with the platform. The intent was to acquire some guidelines for the research and also obtain some restrictions and barriers related to them. The website offers tools to detect data from the interaction between individuals. Being an open community, all the information is online – the projects, users information and opinions, all the contributions.
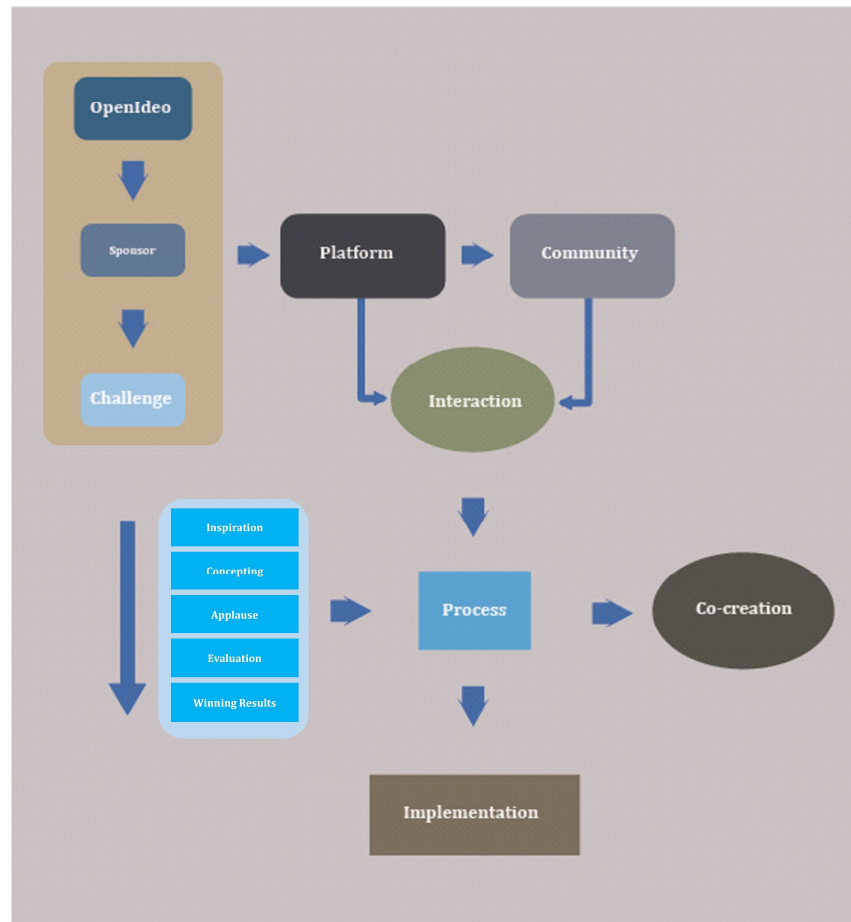
Figure 6 – OpenIdeio history process

Once again, the platform is a forum where the author could explore the CC between all the participants in the projects. From the roles of each participant to the administrators for the challenges, everything is published and free for the community to explore. Since it is the mission of the whole organization to promote collective designing, it was possible to study all the objective of this present dissertation.

3.4   Data Collection

The data collected comprises a challenge from the OpenIdeo website. Since it is an online platform, all the information required for this research is published and open for observation. First of all the website was studied in depth to understand its core business, and afterwards data was collected for the case study. A specific project was selected based on interest in the theme. Throughout the process, data was collected through direct observation, and documentation provided in the website. To complement the research, participants were contacted for a small interview with 9 questions (see in Appendix) related to the experience in OpenIdeo.

The project examined had 1447 participants, with 329 concepts, 20 final concepts and 11 winning concepts.

Triangulation was required to validate the converging findings, and a data base was created with all the notes and documents from the case study.

3.5   Limitations

The intent of the case study is to generalize theoretical propositions, not to population as in statistical research (Yin, 2004). One of the most relevant limitations is the insufficiency of statistical generalization.

Also the research propositions were based on the analysis and choices of the author, who could deflect some data not collected.

4   The case of Openideo

In this chapter, it is presented first DT as a practice, the initiators in this profession and then the case of Open Ideo. Later is revealed the empirical findings collected throughout the study. The findings from the case are structured based on Pralahad and Venkaswami framework for co-creating (2000) and Park composite process for co-designing (2012).

4.1   Ideo

In the last two or three decades we observe the emerging of DT as a practice. This was encouraged by companies like the design consultancy company IDEO and the writings of Kelley, Brown and Moggridge (2008), all from IDEO, Martin (2009) from the Rootman School of Management, Cross (2011) from the UK Open University and a few others.(Cahen, 2005).

Tim Brown, CEO and co-founder of IDEO, in his Harvard Business article (2008), explored some conclusions about DT: "DT is a methodology that imbues the full spectrum of innovation activities with a human centered design ethos". Also he refers DT as a discipline that uses the designer's sensibility and methods to match people's needs with what is technologically feasible and what a viable business strategy can convert into consumer value and market opportunity. (Brown, 2008, p. 86). This approach is integrative and tries to connect all types of businesses.

Brown again proposes that it is an approach to innovation that is powerful, effective, and broadly accessible, which can be integrated into all aspects of a business and society, that individuals and teams can use to generate breakthrough ideas that are implemented and that therefore, have impact (2008). This broad concept sees DT as a process that can be done by different people inside the organizations. It clears that is not only the job for designers but among managers and strategic planners – DT was translated into holistic frameworks moving beyond designer's professional domains and gradually applied to various disciplines and fields of innovation in both academia and business (Brown 2008, Drews 2009, Dunne & Martin 2006; Plattner 2009).

Figure 7 describes the differest steps in the methodology of Design Thinking, created by IDEO, and implemented in Universities such as Stanford.Figure 7 describes

the differest steps in the methodology of Design Thinking, created by IDEO, and implemented in Universities such as Stanford.
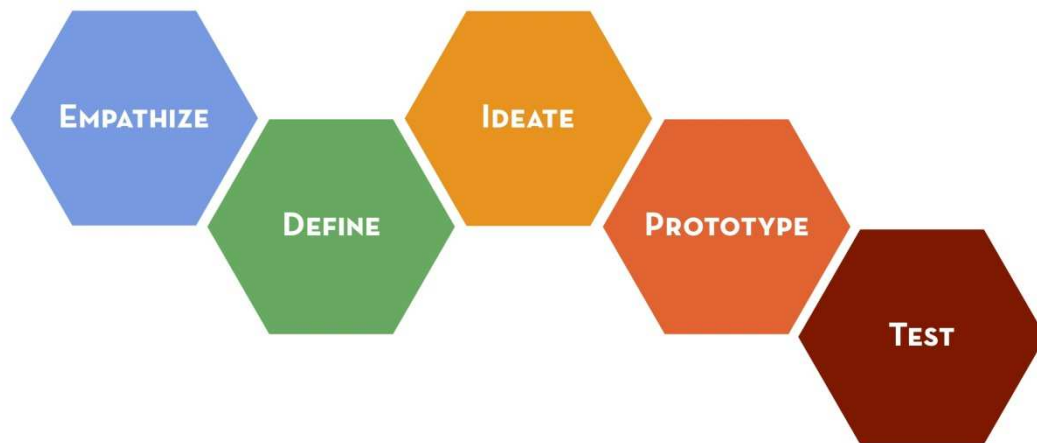
Figure 7 – Standford DT process

However, it is important to state that whereas design thinking research has until recently referred mainly to the design of products, whilst neglecting systems and services, both aspects are now gaining more relevance for the customer and thus for the designer (Martin, 2006).

DT is human-user-centered, and therefore based mainly on non-obtrusive methods such as observation. Brown (2008) for instance states:

"DT is valuable not just in so-called creative industries or for people tasked with designing products. Rather, it is often most powerful when applied to abstract, multifaceted problems: improving a guest experience at a hotel, encouraging bank customers to save more, or developing a compelling narrative for public-service campaign."

IDEO is one of the most influential design consultant firms in the world. It is has different offices across the globe and their business model has a strong focus on educating services such as: process change, prototyping and ideation. Ideation signifies for Ideo such like the brainstorming process, but with an effort on divergent and convergent through processing.

They pledge the approach of DT to implement innovation in companies. Their mission is to take a human centered design based approach to help organizations in the public and private sectors to innovate and grow. (Ideo.com). Their practice in the last

three decades has successfully increase innovation in companies such as P&G, Samsung or GE. Also universities such as Stanford adopted their methodologies for master courses on business innovation.

4.2 OpenIdeo

In 2010 IDEO initiated a social project called OpenIdeo, an online platform focused in advocating DT as a tool to solve social and environmental issues in the world.

The platform is managed by IDEO designers with competences in organizational design and DT education is transferred to this project. Their role is to help the community to interact with the challenges and support the vibrancy of their mission.

OpenIdeo is a worldwide platform with users from 148 countries. This diversity of background and cultures is fundamental for the recognition of the project and for the participants who have the opportunity of contact and engage different approaches to problem solving. It is open to all the people who want to bring ideas to solve challenges. The platform has 5 basic values: it is inclusive, stands as a community-centered, all the projects are collaborative, it is optimistic and always in Beta – because ideas and projects are always evolving and mutating.

Today they have 50 000 users who contributed with more or less 4000 concept to different challenges. Every challenge (it has a 12 week duration, from the announcement of the challenge to publish the winning ideas), it begins with calling a partner, usually a corporation to sponsor and fund the project. Together, it is issued a big question for the community to design and solve. A briefing is published to explain all the challenge and project details. In this next phase, users post their solutions and collaborate with the ideas of the community. All concepts generated are shareable, mixable and reusable by anyone – in a similar way to Creative Commons. (OpenIdeo, 2013). The section "Applause" will define and choose which the favourite concepts are. The next step in the process is the refinement, and it is where co-creation process takes place: the ideas are prototyped, iterated and strengthen to get closed to a final product or service. In the Evaluation phase, users and a panel of Ideo evaluators will decide and announce who the winning ideas are. The community and experts in the field decide who are the ideas that better solve the problem. In the last chapter, Realisation, the ideas are implemented by the sponsor and sometimes by community members who want to bring some of the ideas to life.

Other interesting online platforms for co-creation are Quirky, Fold.it and Usahhidi. Quirky is a platform for inventors – their intention is to design new products. It was founded in 2006 in the United States and has high revenue due to the commission on sold products. The platform provides different tools of co-creation to help users invent and collaborate with each others. Fold.it is an online game developed in 2008 by the University of Washington's departments of Computer Science and Engineering and Biochemistry. The mission is to decipher science problems adding dynamic and enjoyment to the co-creation process. Ushahidi is a non-profit tech company who develops free and open source software for information collection, visualization and interactive mapping (Ushahidi.com). It is an interesting platform that provides open-source tools for the users to design.

4.3   The Project - How Might We Restore Vibrancy In Cities And Regions Facing Economic Decline?

This project (Openideo, 2013) started in November 2011, and it was partnered with Steelcase, a multinational company of workplace products, furnishes and services, founded in 1912. The briefing was to design solutions - from entrepreneurship and education to community mobilization and campaigns - that reinvigorate and help restore areas facing economic decline, population loss, unemployment and erosion of social/civic services or other critical issues. (OpenIdeo, 2013).

Jim Hackett – CEO of Steelcase in the introductory video for the project pointed the importance of the challenge and questioned how the ideas developed inspired people all over the world to assist communities and regions in crisis.

1478 users followed the process and 894 published stories for the inspiration phase. In the end there were created 329 concepts, which were refined in 20 final ones. The winning concepts were 11 (please see Appendix, figure 13, 14 and 15).

4.4 Remarks and Results

"Co-designing will change how we design, what we design, and who designs. It will also affect the tools and methods that new teams of co-designers will use." (Sanders & Stappers, 2008).

Having an unprecedented access to an unlimited quantity of information, consumers can concisely take decisions (Prahalad, 2007). The great value for OpenIdeo is the amount of concise data collected for each challenge and the tools and apps held to empower the user to express and create solutions that otherwise they did not had the opportunity to. These tools enhance the participation from the users and help eliminate the distance between the community.

Figure 8 - OpenIdeo bar graphic

The platform manages multiple streams of projects developing concurrently, as we can see in the bar graphic (figure 8). The graphic contains visual elements that communicate important aspects of the design process. It assists users to recognize what step is in the moment. Also the timelines and stages allow each participant to determine how he wishes to contribute. It is central the liberty for each participant to value the time he puts on the platform. It is a platform based on a chronological process - Waterfall method of sequential development (M. Paulini et al, 2012).

The first tool for each project in OpenIdeo is Inspiration. In fact it is the first instrument in the platform, who gathers all the participants in thinking collectively. In the analysed challenge, a total of 894 impact stories were published, which facilitated the understanding of the problem and helped the community to view the problem with different perspectives.

Each challenge has an education tool to help users design or being introduced to the design process. It helps to break barriers to non-designers having problems with visual thinking. It has topics and guidelines to brainstorm or originate ideas. Also its gives a sheet to sketch the concept and describe the idea.

OpenIdeo offers tools to facilitate the design process and also stimulates the interaction between participants. Sanders and Stappers (2008) stated that this tools enhance the creative process: – "they lead people who are on the doing level of creativity ; guide those who are at the adapting level, provide scaffolds that support and serve peoples needs for creative expression at the making level, and offer a clean slate for those at the creating level."

Example of tool in OpenIdeo is Themes. Themes are areas of opportunity to support of diverging of ideas. Nathan, one of Ideo managers pointed that Themes objective is to "reflect the common community trends, conversations & insights that came up during the Inspiration phase; and to serve as a jumping-off point to guide the solutions we will be generating in the Concepting phase." (OpenIdeo, 2013).

The OpenIdeo team and the sponsor creates the Themes for the challenge in the end of Inspiration phase.

OpenIdeo is an easy-going platform, very visual and colourful. All of this fosters the visual thinking and stimulates the mind to create original ideas. The design of the platform also replies the format of a social media platform, giving the idea of an informal space for collaborating. This has a lot in common with the physical workplaces of Ideo, who pledge offices who inspires the workers to be more creative, exploratory and open to create innovative solutions. The working culture of Ideo's is in OPenIdeo's essence. The visual ideas, the videos and stories shorten the distance between the participants and the real problem.

The platform stimulates and enhances the participation developed a tool called Design Quotient (figure 9). This tool keeps the users motivated and it is recognition of the contribution of each user in the different projects that OpenIdeo has. It is a mixture of views, linked ideas design quotients and a user upvote/like system called "applauds". This application encourages Internet users to suggest their ideas, participate in different phases, and transform other ideas in a collective creation.

From the different posts in the concepts, participants show a high level of enjoyment and recognition for their contributions.

The platform for each challenge empowers previous winning challengers to enrol in a voluntary work called Challenge Community Champions. This role is to encourage community interaction, identify themes emerging from our Inspiration Phase and to select ideas towards our Refinement shortlist (Openideo website, 2013).
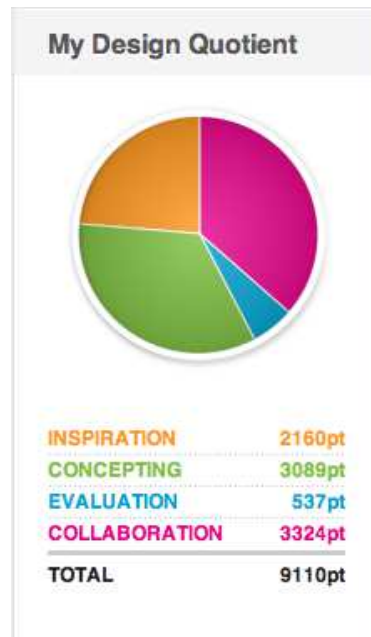
Figure 9 - Sarah Fatallah Design Quotient (OpenIdeo)

This approach from OpenIdeo is their approach to empower vibrant users as Sanders and Stappers (2008) addressed – Designers in the future will make tools for non-designers to use to express themselves creatively.
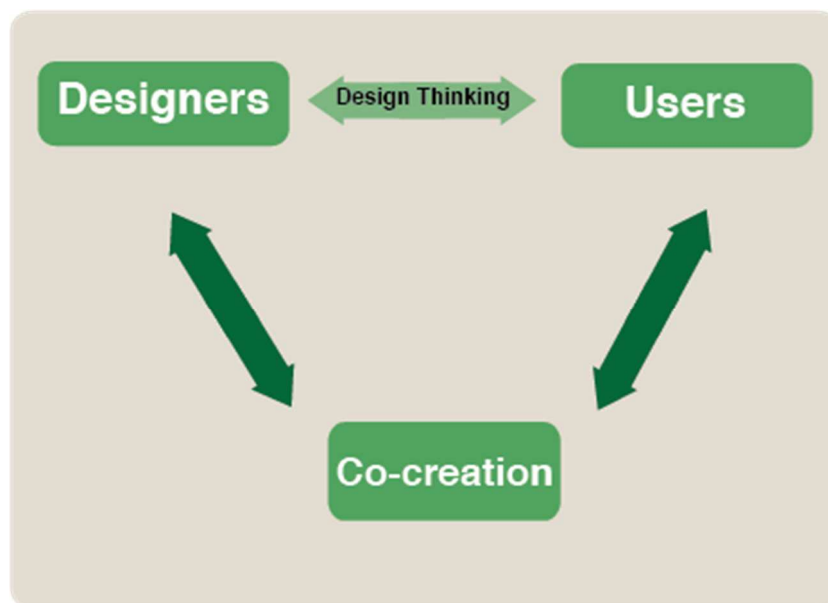

Figure 10- OpenIdeo framework for CC between designers and users.

4.5   Openideo Co-Design Framework

Co-creation activities minimize possible misconceptions between user needs and the end-product (Park, 2012).

Figure 10 describes the process of interaction between designers (from Ideo) and users in the platform of OpenIdeo. Designers support a more open and democratic process of DT with the users. Here, DT Methodology is hybrid and aggregates the motivations and needs of the users as the focus for designing. Thus, the experience in co-creating is fundamental for create valid solution that can connect to the community.

Different tools change the relation between the two parts of the process, building a more inclusive and homogenic group of individuals. The flexibility to come up with ideas for any part of the process is the key factor for participants to be motivated and stimulated in participate in each challenge.

OpenIdeo is itself an online forum to share ideas and create knowledge by a group of individuals. So the fundamental aspect of this phenomenon is the level of communication build in the platform. Communication content can reveal the degree of individual contribution, how a collective understanding of a design problem is formed, how active and engaged a community is within the design process, how ideas are developed, how they grow or decline in popularity, and the extent of collaboration (Simoff and Maher, 2000). All the stories in this phase give to all the users a sense of belonging and appropriation into to the project.

4.6   Interviews

To complement the analysis of the research, four interviews were conducted with participants of the challenge. The interviews provide some overview from the experience of the participants and collected some fragments of key factors for the co-creation in design thinking.

Nine questions were asked to clarify some significant details about the interaction between users and what were the key-elements for an efficient co-creation.

All of the interviewees expressed the significance of the contribution of other user in their concepts. Brian Redondo (see Appendix) summarise in one phrase the power of motivation in the process and the importance of user collaboration - Without other

users cheering on my idea and offering up suggestions (and thus expressing interest), I would not have been motivated as much to pursue the concept to its completion. Johan Lofstrom (Appendix) also referred the importance of facilitating the design of the solution - If there was no input/feedback/comments it would have been a lot harder to develop the concept.

Like we realized, flexibility and openness play a fundamental role in the process of co-designing. Michael McDearmon mentions three interesting points - an openness to external input that may or may not come from those with design expertise, flexibility – because a design proposal will change based on information gathered from the field, positivity – because criticism shuts down those you are working with. Johan Lofstrom also expressed the significance of diversity of opinions in developing a better solution (Appendix).

4.7   Findings

For this study there was the necessity of find some elucidations from the concepts submitted for the challenge. There were 389 concepts initiated, that in the process came to 20 final concepts. In the end 11 ideas were choose as winning ideas (please see Appendix, figure 13,14). It would be arduous to analyse in detail all the first concepts, so it was determined to only examine last 20 concepts. The justification was that these last 20 were the ideas with more potential and significance to the community and where the collaboration between the user happened with strong implication. In this stage the plan was to scan the factors who turn to be fundamental to the success in the challenge.

The case shows us the level of interaction will change the solutions. The different channels of participation – clicking on an icon to vote, build a concept on another or being involved in ongoing design discussions affected tremendously the concepts. The amount of people that interact in the challenge was a record for the platform, exposing that the people had a real concern in the solutions gathered. The user-evolving collaboration encouraged the communication and shaped the outcomes.

The features scrutinized were the amount of persons in the virtual team, the number of different participations in each idea (number of inspirations, concepts, applauses, comments, evaluations and views). The objective was to find a link between these level of interaction between users and the success of the ideas. The author states that the

statistic presented has not the goal of define precisely the chain reaction, but to present some noteworthy findings for the matter of the study.

What this map reveals to case study is that all winning ideas had more contributions then the ones that didn't get ahead of. All of the 11 winning one's had more team members (average 10,6) of the loosing ideas (a 7,3); had more inspiration build in (average 30 to 3,6); more concepts build in (average 7,2 to 2,3); more applauses (55,6 to 28,6); more comments (62 to 34,1); more views (4283,3 to 1959,2) and evaluations (41,9 to 36,7).

From these elements, the views don't have so much significance, because they could be the consequence of users seeing more in the end the winning concepts and not watching the one's that didn't get to the end.

The focus is in the comments panel. The comments fuelled the concepts and originated the inviting to form the virtual teams i.e. the contributions that matter to the ideators led to them to invite other users to join the team responsible for the concept
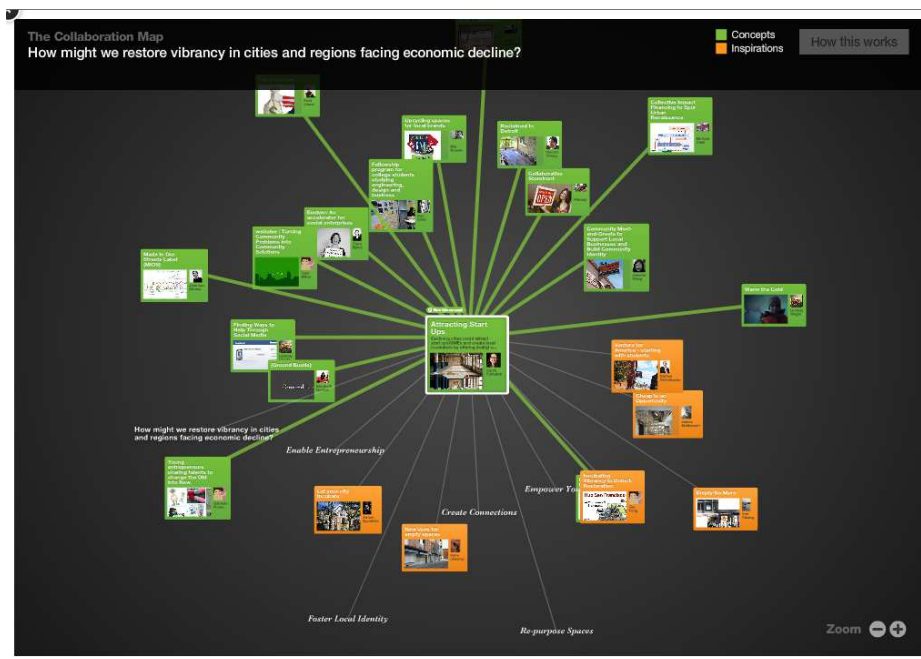
Figure 11 - Collaboration Map

In the Collaboration Map (figure 11), an interactive application developed to enlighten all the networks between the inspirations and the concepts in the project, provides to the research a great perception about the impact of the contributions in "Vibrancy in a box" a winning concept created by Sarah Fatallah (see Appendix). The concept had been originated by 14 inspirations and build upon 9 early concepts. Like we saw in the statistics, a concept drawn by the participation of different inspirations

and concepts contributes to a more inclusive and strong final concept. It is the aggregation of different point-of-views and ideas that produce an idea that can without difficulty relates to all the community needs.

In addition to all this contribution, Sarah formed a virtual team of 17 users who collaborated with her to refine the idea. Like it was said in the beginning of this chapter the number of contributions changed the outcome in the concepts. The winning ideas had more members than the ideas that didn't won. The users valued the different opinions of each contribution and converge them into the concept. This concern is other key-factor for having success in the projects: the individuals who can adapt more ideas from others have a competitive advantage. So flexibility is a fundamental characteristic for co-designing.

Other interesting fact is the importance of communication between the users as a vital mechanics to co-create. As the literature reviewed, Prahalad defined (2007) that dialogue originates and preserves a loyal community. Communication between users will originate a better solution. Zip spaces, a concept developed by Rebekah Emanuel had 112 comments.

Figure 12 shows the communication between a user and Rebekah. The contribution was incorporated in the concept. These interactions are vital for the completion of the challenge and shows us the power of connecting to others and trusting in others point-of-views.
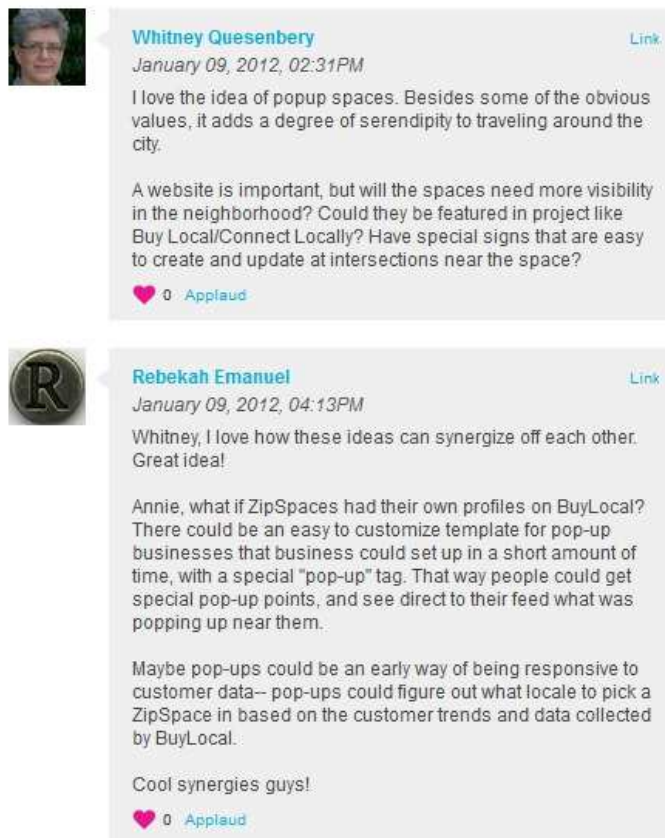
Figure 12- Platform commentaries

From the interviews and all observations from the data collected some principles can be drawn from the impact of co-creation on DT:

Based on the case of OpenIdeo, it is revealed that the role of the designer changes: he turns to a facilitator for the experience of creating solutions with the users - an educator and motivator for the process of design and visual thinking. Since there is a belief in Ideo's mission that all people are creative, OpenIdeo developed different tools to enhance creativity first and to collaborate while creating in the second. The importance of educating users to design, and offer the best tools to open communication are visible in the platform.

Users in the process of co-designing receive competences in creative thinking, problem-solving and in general the design of artefacts. Louise Wilson, one of the top contributors in several challenges refers in her profile (OpenIdeo, 2013) – "I have a real passion for service design which has allowed me to use my design and project management skills to translate insights into sustainable solutions. I enjoy engaging with the end user, gaining a deep understanding of a problem and being creative in a non-traditional way." From presenting guidelines to design, to challenge users to connect

with others and to instigate the focus of the user with the problem, OpenIdeo is itself an experience that enables the creative thinking in persons and develop skills like openness, divergent thinking and tolerance

So users develop their creative skills and become equal creators in solving problems by DT methodology. They are stimulated to think and behave more openly and can express more visually.

Thus, the user/customers have a new competence and responsibility in the creation of value. Their commitment and involvement is fundamental to find the best "products" that can suit their needs perfectly. .

Different competences and characteristics while co-creating with users are indispensable and essential to achieving success. The key-factor to ensure realisation in the challenge is to best accept and then incorporate ideas from others. Being open to new mind-sets and points of view will define the final solutions. Also being optimistic and confident in contributions of others are essential for the two parts of the process.

In conclusion, what is witnessed is that DT with CC changes the approach of designers. Their initial strategy, a human-centered-design transforms into a user-centred-design, i.e. the focus is in the activity of using or consuming a product or service. The goal now is of to engage with the users and their user needs to generate solutions, products or services. The focus is in the experience and not in the process of designing.

5   Conclusions

The objective of this dissertation was to analyse the impact of a new collective creation domain in the DT for SI. Table 5 explores the conclusions in this dissertation. Some implications arise when the principles for co-creating value interact with the series of design processes: First of all a new mindset for designing is born. The focus is on the experience, and the tools utilized serve for that purpose. Experience defines what is valuable to a consumer. With the classical model for DT, the focus was on the design, so the tools will adapt to facilitate the interaction between the two parts. Also as the human needs change every time, the tools for co-creating will automatically change to respond to the issues. Second the mission is to push a strong user involvement and empowerment. The user gains competences in designing and searching for their role in a multi-disciplinary team.

Co-creating in the Design Thinking

	Conventional Design Thinking	Co-Design
Focus	Design solutions	Interaction experiencies
Approach	Human Centered Design	User Centered Design
Pattern of **interaction**	Passive, Linear, controled	Active, democratic and open
Role of the **Designer**	Process leader/manager	Facilitator / Educator
Role of the **User/Consumer**	Passive participant	Active participant - **Co-Designer**

Table 5 - Co-Creating in the DT

With co-creation, DT turns to a more democratic "forum", where different forms of "negotiation" take place. The author defines negotiation as the mediation of needs and competences between user/consumers and designers/producers. Communication is a dominant factor for the efficiency of the mediation. All of the research considers communication as the basis for co-designing for social purposes. Organizations and countries will end up creating tools to increase the level of communication by developing a common "language" with all users.

The concept which unites the two innovation processes, DT and CC – CD is defined by the equal participation of the two elements, and a more inclusive and balanced team which will translate in successful results.

Another implication is in the Design teams. Designers skills will be more hybrid and diverse; they will have different backgrounds and competences such as Design Education and Management will be significant. As we analysed in the last chapter, designers will have the role of facilitating and enhancing the participation of consumers in the Design process, with a strong effort in breaking communication barriers. Characteristics such as openness and flexibility will be essential for the experience of co-designing. Other significant aspects are optimism and team work.

Social problems will always need the motivation and the participation from individuals all over the world. With this study, it is clear that a collaborative DT methodology can have a great influence in creating influential solutions for challenges never unravelled.

5.1 Contributions

This dissertation contributes in different disciplines: First it contributes to the Design research, has it undermines the methodology behind Design and Strategic Design Management. Second it enriches the Management world, more precisely in the disciplines of Change Management and Social Innovation. This research also appeals for the Marketing sector as it provides knowledge on the importance of the consumer needs.

5.2 Limitations

In the case study observed some limitations were found. OpenIdeo relies on timelines to engage user in the design process. Being a positive method to attract user contributions, it is on the other hand a barrier for a more exploratory process. Collective design may currently lack the technological support to enable a truly flexible methodology, which is why such heavy emphasis is placed on sequential items such as timelines (Paulini et al, 2012). While the talks with the users demonstrate that there is no need for a strong pre design skills, visual thinking will always be a key-factor for designing. What is clear is that the tools for co-designing will have to educate and

prepare users for visual thinking and prototyping process. Without this facilitation the design process will be difficult for individuals without design or a creative education. Other limitation is the inherent nature of the online community to drop in/drop out. As we observed, OpenIdeo has a constant effort to make users feel motivated in the challenges.

5.3   Suggestions For Future Research

Future research in the how to create returns/rewards for participants needs is fundamental to study. Also a fascinating topic to study will be how to interpret efficiently the changing need of users in design.

Also the research on the communication of users and producers for co-designing will have an impact on the implementation of this innovative methodology.

An interesting topic for investigation is a business model for social organizations based on co-designing. What changes in institutions when the co-design of experiences takes place, and how these institutions can advocate the education of co-design for social innovation.

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7 APPENDIX

7.1 A -Interviews

"How might we restore vibrancy in cities and regions facing economic decline?"

1. *From 1 to 10 (1 being non-important and 10 very important) how significant was collaborating with other people in your project?*

    -   Brian Redondo - 7
    -   Vladimir Melnikov - 6
    -   Michael Mcdearmon – 10
        -   o Collaboration was extremely important and came on two levels; the first being insights and dialogues with the online community on OpenIDEO, and the second being with the local people that were interviewed as part of our developing design proposal.
    -   Johann Lofstrom – 5
        -   o unsure, different challenges on OpenIDEO bring different sets of collaborators, difficult to remember this exact project)

2. *Do you think that your project without the collaboration process would have succeeded? Justify.*

    -   Brian Redondo
        -   o Without other users cheering on my idea and offering up suggestions (and thus expressing interest), I would not have been motivated as much to pursue the concept to its completion.
    -   Vladimir Melnikov
        -   o I haven't finished this particular project. My impact was rather inspiring for other participants.
    -   Michael McDearmon

- o The project may have succeeded without assistance from the online community, but certainly would have gone nowhere without the help of local experts in the urban planning, law, and community development fields.
- Johan Lofstrom
  - o Not sure. If there was no input/feedback/comments it would have been a lot harder to develop the concept. Maybe the same concept had been written, but it would have taken much longer time, and required enormous amounts of research and work on my behalf.

3. *Name the 5 most significant competences gained in collaborating in this project?*

- Brian Redondo
  - o Concepting, UI design, Business Modeling
- Vladimir Melnikov
  - o International point of view, each other ideas improvement
- Michael McDearmon
  - o I would say (in no particular order): an openness to external input that may or may not come from those with design expertise, flexibility – because a design proposal will change based on information gathered from the field, positivity – because criticism shuts down those you are working, the ability to get out into the field and speaking with real people – because the best insights are still found offline, and keeping an eye on viability – because no design will ever come to fruition if it isn't financially or socially viable.
- Johan Lofstrom
- o Many more ideas, much more diversity of ideas and angles of problem solving and perspectives.

4. *What is the benefit (non-tangible, tangible, knowledge, interest, reputation) for you, in generating solutions in a multi-disciplinary*

platform like OpenIdeo?

- Brian Redondo
  - o Immediate feedback from a vested community of designers and entrepreneurs. You can access their collective knowledge for inspiration and problem-solving, while being rewarded with increased reputation and encouragement for your ideas.
- Vladimir Melnikov
  - o For me it was just fun. It's great opportunity to meet people of your profession around the world and make new connections.
- Michael McDearmon
  - o OpenIDEO allows you to bounce ideas off of people that come from places around the globe and from many different backgrounds. This is great in the ideation phase because it allows you to explore a huge variety of insights. At the end of the day, though, it's still critical to make sure that any design addresses the needs of the intended audience, and the people on OpenIDEO can only get you part of the way there-
- Johan Lofstrom
  - o Reputation for my CV, increased personal creative ability, higher level of international interaction with diverse group of people(that I would never had opportunity to discuss with).

5. *Do you think that, in order to participants win challenges; they must have a prior design background/skills or tacit knowledge in design thinking methodology?*

- Brian Redondo
  - o Not at all. One must simply be inspired and think through an idea creatively.
- Vladimir Melnikov
  - o It's not necessary. Design skills (and design thinking) are just a way

of problem solving. You can solve the same problem by using any other skill you're familiar with.

- Michael McDearmon
  - No, I think – for the most part - people recognize a fantastic entry when they see it. Designers can help take a concept to the next level in terms of form and function, but often miss the mark when it comes to solving the real problem at hand. To me, that's why battle testing any concept or prototype with the end user / audience is critical.
- Johan Lofstrom
  - No. A good idea is a good idea (unregarded of the ideators education/degrees).

6. *What abilities and skills, must designers have to co-design with others?*

- Brian Redondo
  - Good communication, thoughtfulness, empathy, creativity
- Vladimir Melnikov
  - An ability to listen each other and build on each other's ideas. Also the same way of thinking is important for fast and efficient communication.
- Michael McDearmon
  - I'd say a good variety of the skills listed my answer to Question 3. In addition, the ability to really listen to end users and design for their needs. It sounds simple, but the target gets missed so often it bears repeating.
- Johan Lofstrom
  - Ideas, Creativity, language skills, basic knowledge of existing products and services

7. *Name 5 pros and cons of working with a stranger online?*

- Brian Redondo

- o Immediate feedback, access to a repository of ideas are pros. Difficult to have a full-fledged conversation about an idea in message threads is a con.
- Vladimir Melnikov
  - o There is no big difference for me if it's a stranger or not.
- Michael McDearmon
  - o Unbiased critique, unique points of view, helpful research, documentation (everything is saved on OpenIDEO's platform), and relative anonymity can be good for collaboration.
- Johan Lofstrom
  - o Pros: Huge potential of diversity (if you normally would work together with a "likeminded" person from your own culture and with your own set of skills)☐Cons: some talented people may leave internet and go on vacation for a month in the middle of the process. Some people becomes extremely competitive and forget that collaboration is to help and aid each other (there have been a few that abused system).

8. *Name 5 characteristics you suggest to improve collaboration in a design project.*

- Brian Redondo
  - o Video conferencing, co-modeling tools, and desktop sharing would be useful.
- Vladimir Melnikov
  - o Forming small teams in addition to whole group discussions.
- Michael McDearmon
  - o Checking your ego (people who like to control a project have difficulty with this), stay on target (think of the main objective and don't lose sight of that), get ideas as real as possible and as soon as possible, have a system in place that allows everyone on the team to speak their mind – but also agree on a primary direction early in the process, work on prototypes together in manageable chunks – like

the weekly sprint in agile design / development, and know your role
– team members need to know what's expected of them and be
empathetic to others when they might be over stepping their role and
stepping on a team mate's toes.

- Johan Lofstrom
  - Be flexible, Never say no to a new idea or angle, Always be prepared
    to rethink—back a step and redo parts. Never be afraid to ask around
    for assistance.

9. *Do you think that online communication affects the collaboration process? In what way?*

- Brian Redondo
  - Networked communications conditions us to think on a larger scale
    and be open to countless possibilities in the collaboration process.
  -
- Vladimir Melnikov
  - Online communication slow down idea flow and discussions, but on
    the other hand you can collect more ideas from bigger number of
    people.
- Michael McDearmon
  - In some ways it is positive, in that you can learn many things from
    different opinions and OpenIDEO helps facilitate that. In some
    ways it can be distracting, though, and you as the designer need to
    know what feedback will help solve the problem and what will
    potentially cloud the subject and move you off course.
- Johan Lofstrom
  - Online collaboration is very similar to ordinary office workplace
    collaboration with the advantages of the potential to have
    multinational collaboration across all timezones, and much higer
    diversity of ideas and expertise and experience.

7.2   B- Graphics

Final Concept	Submited By:	Virtual Team	Winning Concepts	Contribuitions					
				Inspiration	Concepting	Applause	Comments	View	Evaluation
Vibrancy in a Box	Sarah Fathallah	14	Yes	14	9	39	46	4043	38
ShareFair, On-And Offline Rent, Swop, And Share	Elmar Stroomer	5	No	4	1	34	36	1721	33
Attracting Start Ups	Sarah Fathallah	17	Yes	6	16	78	98	4511	55
ZipSpaces	Rebekah Emanuel	22	Yes	4	11	128	112	4944	48
Vibrancy Fuel Pack: A starter Boost	Sina Mossayeb	N.A.	No	7	2	11	7	980	23
Pocket Change: Empower Youth to Improve their Neighborhoods	Macy Parker	7	No	0	2	39	30	1143	38
Rivalry! A competitive challenge network to spark business growth and city spirit	Mei Hsieh	3	Yes	0	2	11	14	2225	24
Revitalizing Detroit: A Collaborative Approach	Fred Krawchuk	12	No	0	1	43	53	2697	66
Create a barter market	Brian Redondo	12	Yes	1	2	51	49	4836	35
When Life Hands you lemons, make lemonade: Entrepeneur in Residence	Natalie Grillon	5	No	1	2	31	35	1737	38
Dialogue-booster Park!	Jens Mortensen	N.A.	Yes	0	7	36	59	2806	54
Local Lore treasure Hunter	Julia	8	No	0	5	21	48	1645	36
Open City	Mathew Rouser	1	Yes	7	8	56	61	5394	43
Engage University Students in Community Projects	Amanda R	5	Yes	5	14	60	57	3025	47
Reclaimed in Detroit	Vincent Cheng	23	Yes	288	8	65	71	7097	42
Buy Locally, Connect Locally	T. Annie Nguyen	4	Yes	3	1	29	39	3204	34
Decode the Codes	Mike McDearmon	5	Yes	2	2	59	77	5032	41
A guerrila Marketplace	Claire Cottrell	7	No	0	3	16	23	1749	28
The b2b Buys Local Pledge	Erica Stephan	N.A.	No	0	2	18	19	1073	28
Infographics to inspire change	Amanda Drescher	N.A.	No	21	3	45	56	4888	41

Figure 13 - Challenge Projects

Final Concept	Link to concept
Vibrancy in a Box	http://www.openideo.com/open/vibrant-cities/winners-announced/vibrancy-in-a-box/#
ShareFair, On-And Offline Rent, Swop, And Share	http://www.openideo.com/open/vibrant-cities/concepting/sharefair-on-and-offline-rent-swop-and-share-fair-/
Attracting Start Ups	http://www.openideo.com/open/vibrant-cities/concepting/attracting-start-ups/
ZipSpaces	http://www.openideo.com/open/vibrant-cities/concepting/zipspaces/
Vibrancy Fuel Pack: A starter Boost	http://www.openideo.com/open/vibrant-cities/concepting/vibrancy-fuel-pack/#
Pocket Change: Empower Youth to Improve their Neighborhoods	http://www.openideo.com/open/vibrant-cities/concepting/mobile-micro-jobs-for-the-city-empower-youth-to-improve-their-neighborhoods/
Rivalry! A competitive challenge network to spark business growth and city spirit	http://www.openideo.com/open/vibrant-cities/concepting/rivalry-a-competitive-challenge-network-to-spark-business-growth-and-city-spirit/
Revitalizing Detroit: A Collaborative Approach	http://www.openideo.com/open/vibrant-cities/concepting/revitalizing-detroit-a-collaborative-approach/
Create a barter market	http://www.openideo.com/open/vibrant-cities/winners-announced/instead-of-a-farmer-s-market-create-a-barter-market/
When Life Hands you lemons, make lemonade: Entrepeneur in Residence	http://www.openideo.com/open/vibrant-cities/concepting/when-life-hands-you-lessons-make-lemonade-entrepreneur-in-residence/
Dialogue-booster Park!	www.openideo.com/open/vibrant-cities/concepting/dialog-booster-park./
Local Lore treasure Hunter	http://www.openideo.com/open/vibrant-cities/concepting/local-lore-treasure-hunt/#
Open City	http://www.openideo.com/open/vibrant-cities/concepting/opencity-bringing-open-source-princi/
Engage University Students in Community Projects	http://www.openideo.com/open/vibrant-cities/winners-announced/engage-university-students-in-community-projects/
Reclaimed in Detroit	http://www.openideo.com/open/vibrant-cities/winners-announced/reclaimed-in-detroit/
Buy Locally, Connect Locally	http://www.openideo.com/open/vibrant-cities/winners-announced/buy-locally-connect-locally/
Decode the Codes	http://www.openideo.com/open/vibrant-cities/winners-announced/decode-the-codes/
A guerrila Marketplace	http://www.openideo.com/open/vibrant-cities/concepting/a-guerilla-marketplace/
The b2b Buys Local Pledge	http://www.openideo.com/open/vibrant-cities/concepting/business-to-business-buy-local-pledge/
Infographics to inspire change	http://www.openideo.com/open/vibrant-cities/concepting/infographics-to-inspire-change/

Figure 14- List of Projects

Contributions per Country

105	3
8	2
6	1
5	0

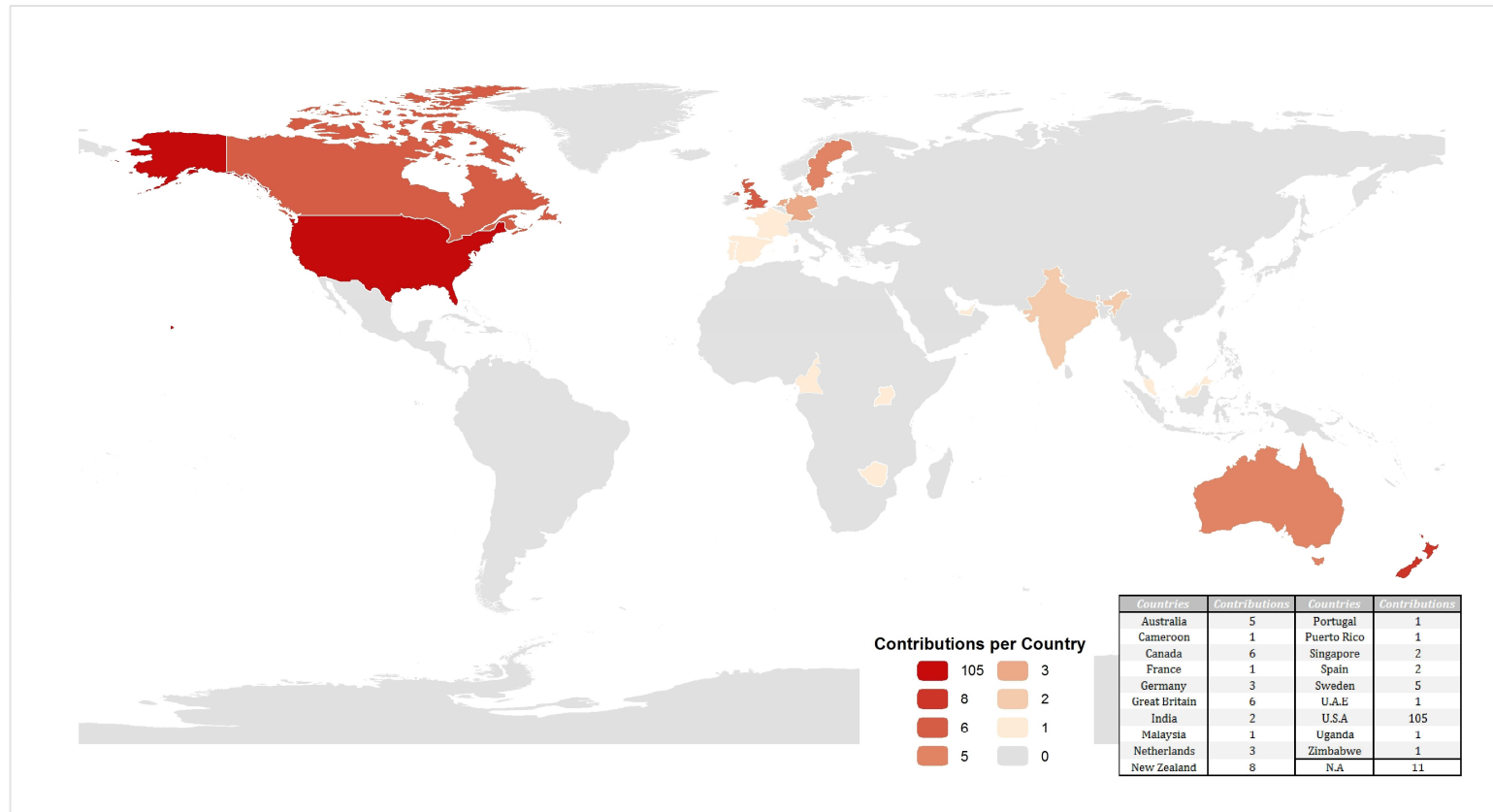| Countries	Contributions	Countries	Contributions
Australia	5	Portugal	1
Cameroon	1	Puerto Rico	1
Canada	6	Singapore	2
France	1	Spain	2
Germany	3	Sweden	5
Great Britain	6	U.A.E	1
India	2	U.S.A	105
Malaysia	1	Uganda	1
Netherlands	3	Zimbabwe	1
New Zealand	8	N.A	11

Figure 15 - World contributions ranking