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An agorà for collective innovation:  
designing a dynamic web-based platform  
for communities

Battistella C. (University of Udine)  
Biotto G. (University of Udine)  
De Toni A. F. (University of Udine)

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# **AN AGORÁ FOR COLLECTIVE INNOVATION: DESIGNING A DYNAMIC WEB-BASED PLATFORM FOR COMMUNITIES \*\***

***Cinzia Battistella, Gianluca Biotto, Alberto F. De Toni***

*University of Udine, Department of Electrical, Managerial and Mechanical Engineering, via delle Scienze 208, 33100 Udine, Italy*

*Corresponding author: Tel: +39 0432 558043, Email: cinzia.battistella@uniud.it*

## **ABSTRACT**

*Achieving successful, repeated organizational innovation is a never ending primary challenge for companies. But often this cannot be pursued in a standalone modality. New practices are emerging to foster innovation, by building networks for collaboration and leveraging networks of outsiders.*

*The paper empirically investigates the state of the art of open innovation web-based platforms (OIWP) through a classification of more than 200 OIWP based on nine variables. The aim is to offer a framework to position the different platforms, investigating the trends and evolving paths.*

*The research suggests that the evolution of OIWP is going towards a more structured collective approach to favor cross-fertilization and technology transfer among companies, where the main roots to feed an innovation ecosystem based on web platforms are even more the concepts of communities and cognitive diversity, self-organization, ecosystem and shared fate.*

*Finally, we present the concept, design and undergoing development of an OIWP named iCommunity, based on these concepts and projected to increase the innovation landscape of European SMEs and SMEAGs.*

## **KEYWORDS**

Collective innovation; open innovation; innovation ecosystems; emergent communities; crowd-sourcing; web-platform for innovation.

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## INTRODUCTION AND BACKGROUND

Achieving successful, repeated innovation is a challenge for companies. An organization can innovate by improving existing products, services, or processes or by generating new ones. In the early 20th century, Joseph Schumpeter introduced the economic theory of creative destruction, to describe the way in which old ways of doing things are endogenously destroyed and replaced by the new. Creativity is also seen by economists such as Paul Romer as an important ingredient in the recombination of elements to produce new technologies and products and, consequently, economic growth. This recombination can be obtained in several ways for industries, for example by technology transfer or cross-fertilization and can be enhanced by the building of networks for collaboration.

Contrary to incremental innovation, where specialization is a winning strategy, discontinuous innovation requires an interdisciplinary approach and a diversity of knowledge base that in general companies, and especially SMEs, struggle to access. They, in fact, can fall victim to myopia and other challenges, because they experience cultural and financial access barriers to innovation (Lange *et al.*, 2000), therefore they tend to adopt an unplanned, informal, crisis-driven approach to R&D, perceiving it purely as a mean of solving immediate rather than future problems (Lawless *et al.*, 2000).

Today innovation is no longer regarded as a linear process but as a dynamic and complex development beyond the boundaries of companies. In this systemic and dynamic perspective, knowledge is simultaneously a key input and a key output to businesses and the economies they belong. Capitalizing knowledge efficiently is an increasing need in firms, industries, and governments to compete locally and globally (Rohrbeck *et al.*, 2008). In this sense, a collective approach can favor cross-fertilization and technology transfer among companies, but often a structured approach is still needed.

IT has dramatically reduced the cost of accessing new potential ideas and new networks of business and collaboration. In fact, to shorten the innovation circuit, Open Innovation Web-based Platforms (OIWP) can leverage networks of outsiders by building networks for collaboration (Pisano and Verganti, 2008). But while OIWPs exist for big companies (see Procter&Gamble), for SMEs an *agorà*, the humus to enhance social and innovation capital, is still needed. In order to design this new platform, the research aimed to identify the characteristics of existing platforms and their main innovative features, in order to decline them in a new context.

Therefore the paper presents the results of a research focused on the comprehension of the OIWPs' evolution. Our research aim has been to recognize the state of the art of OIWPs, their actual limits in terms of innovation, collaboration and companies' involvement and to suggest possible trends of future evolution. Subsequently, we designed a framework based on ten variables with the aim to position the different OIWPs, to investigate the level of collaboration reached by them and to identify their design trends and evolving paths for a more efficient and effective innovation process.

Thanks to the investigation of the literature, we first present a framework to analyze the OIWPs, then we present their state of the art and the trends we identified. Finally, our work presents the concept, design and undergoing development of an OIWP named iCommunity, based on these concepts and projected to increase the innovation landscape of European SMEs and SMEAGs.

## RESEARCH AIM AND DESIGN

The present work aims to contribute in enriching the research field on the collaborative networks for innovation, proposing a framework to analyze and understand the state of the art of OIWPs and their present limits and to suggest where they are evolving. The paper therefore addresses the following research questions:

- ***What are the key variables to analyze a collaborative network through open innovation web-based platforms?***

- *How can a web-based platform be designed to enable self-organized innovation of community of peers?*
- *Where is evolving the web context to enhance innovation and competitiveness success of companies?*

The methodology adopted can be divided into two analysis:

1. a literature analysis on cross-fertilization and collaborative networks and OIWs, in order to highlight the variables that will be used as a basis for the classification;
2. an empirical analysis of more than 200 OIWs (quoted in appendix A).

Starting from the literature analysis, we selected the 7 more meaningful classification variables used in the literature to characterize the OIWs and we added other 3 dimensions to characterize the innovation process. We used the 10 features to analyze and classify more than 200 OIWs, selected basing on their availability in literature or in the World Wide Web and the possibility to evaluate them or the availability of an in-depth description of the selected features.

In Table 1 we report the classification variables, the characteristics and the references.

**Table 1.** *Open innovation web-based platforms classification criteria*

OPEN INNOVATION WEB-BASED PLATFORMS				
	N°	CLASSIFICATION ITEM	CHARACTERISTIC	REFERENCE
COLLABORATIVE INNOVATION MODEL	1	Subject	individuals	Engerstrom (1987)
			companies - big	
			companies - SME	
	2	Openness of participation	open	Pisano and Verganti (2008)
			closed	
	3	Governance	hierarchical	Tapscott (2005), Pisano and Verganti (2008)
			flat	
	4	Value integration	low	Tapscott (2005)
			high	
	5	Interaction	collaborative	Snow et al (2008)
			not collaborative	
	6	Condivision	trasparent	Tapscott (2005)
			not trasparent	
	7	Time of collaboration	synchronous	/
			asynchronous	
	8	Collaboration transaction	spot	/
			ripetitive	
INNOVATION PROCESS	9	Phase	foresight	/
			creativity	
			design	
	10	Tools	availability of tools	Engerstrom (1987)
			not availability of tools	

#### OPEN INNOVATION WEB-BASED PLATFORMS: STATE OF THE ART

The subject refers to both contributors and beneficiaries. The beginning of the platform, in other words who has a benefit from it, is based on individuals, corporate initiatives or many companies. The members of the communities of peers can be both organizations and individuals, in particular

the involved organizations are big companies and SMEs, but also universities, research centers and other companies (as for example consultancy companies). Individuals can be both employees of the organizations or users from the World Wide Web: the best platforms are designed and programmed to cover the needs and the abilities of these not IT experts. The majority of the platforms (65%) are designed for individuals, others are open for companies' innovation, but there are really few (3%) focused on small or medium enterprises as subject for innovation.

### ***Innovation process***

Specifically referring to innovation, the innovation process can be broadly divided into three main phases, foresight, creativity and design that let emerge in the development of an innovation ecosystem three main domains: the trend, the concept and the design domains.

1. The TREND analysis and setting domain: Foresight is the study of how the organizations can identify weak signals, anticipate emerging markets, trends and scenarios, and manage disruptions in order to be prepared to an uncertain future and to survive in turbulent markets (Schwartz, 1991; Van der Heijden, 1997; Becker, 2002). As regards OIWs, Foresight is commonly applied in large firms with long and complex development processes and extended products' life cycles, though most SMEs do not have access to it due to resource and capability constraints (Rohrbeck et al., 2008). Although Innovation and Communications technology (ICT) is commonly used as a platform for foresight methods, its main use is only enabling. In this regard, ICT is playing an increasing role in open innovation and collaboration networks among SMEs (Chen et al, 2008). An example regarding open innovation, foresight and ICT tools is given by the S&T Foresight Knowledge Sharing Platform that grants practitioners access to a free Foresight software that allows companies to implement foresight solutions according to their respective toolbox needs. Although resourceful, this open platform does not aim to integrate the foresight process into the particular managerial strategy of firms but diversify their strategic toolbox. Hence, the tool's applicability is greatly dependent on the firm capabilities and familiarity with the foresight process. Another important aspect is that the technology, although based in internet access, does not aim (nor support) the simultaneous interaction of performing firms limiting the added-value of mutual collaboration.
2. The CONCEPT developing domain: Creativity is a mental and social process involving the generation of new ideas or concepts, and new associations between existing ideas or concepts. Theories of creative processes impact at individual, group, organizational and cultural levels (Xu and Rickards, 2007). The significance of creativity is increasing as organizations move towards a more dynamic concept. Creativity is fostered in environments where people are engaged in challenging activities and have the right level of skill to meet them Creativity is best achieved in open climates where there is: interaction with small barriers; a large number of stimuli; freedom to experiment; and the possibility of building on earlier ideas. It follows that team creativity, in contrast to individual creativity, has the additional advantages of knowledge from different areas being combined and the interaction of the team members providing stimulation and a pool of ideas to build on. As regards OIWs, many platforms for creativity can be found in the web, for example Ideaconnection gives solutions for companies connecting problem solvers and innovation resources, Inventnow gives the possibility to also patent and share inventions, Fellowforce permits companies to post challenges and select the best solutions and give rewards to the problem solvers.
3. The DESIGN implementation domain: Design is the process of designing, building, operating, and maintaining a good or service. Design is "the initiation of change in man-made things" (Jones, 1970). In the design phase modularization is a powerful conceptual tool for managing complex systems. Modularization can also be regarded as a strategy deliberately pursued in order to organize efficiently and smoothly the processes associated with product development. Project complexity forces large and heterogeneous groups of designers to work together on innovative projects over long periods of time. It is important for each designer to know the design process,

to aware and understand how the work of other designers within the project – or in similar projects – is relevant to their own part of the design task. So it is central to develop systems that support collaborative and networked design and, afterwards, design communities. As regards OIWP, platform-based design is a powerful concept for coping with the increased pressure on time-to-market, design and manufacturing costs. Internet can be therefore a distinctive capability for more interactivity, enhanced reach, persistence, speed, flexibility, and engagement of customers and suppliers and other SMEs. For example, Ducati from the motorbike industry and Eli Lilly from the pharmaceutical industry use these Internet-based collaborative innovation mechanisms to facilitate collaborative innovation at different stages of the New Product Development process (back end vs. front end stages) and for differing levels of customer involvement (high reach vs. high richness). Finally, one of the most famous examples of open innovation platform for new product development, in other words design open source is the Arduino project ([www.arduino.cc](http://www.arduino.cc)), that is a physical computing platform that can be used to develop stand-alone interactive objects or can be connected to software running on a computer (e.g., Adobe Flash, SuperCollider, etc.). Another one is Openmoko, a project that has the “free your phone” mission, to create mobile phones (releasing both hardware and software) with an open software stack, allowing users to customize the phone platform to their needs, modify existing software, and create or install any additional software.

As regards specifically the tools, tools and methodologies are connected to the activities to generate concrete outputs (trends, ideas and products). Some platforms give access to tools and methodologies of the three domains, foresight, creativity and design, but more than the 60% of the platform analyzed, there is not availability of tools.

The systematic application of foresight, creativity and design methods and tools into the decision-making process of companies and their products development is seen as a fundamental support to innovation (Rohrbeck et al., 2008; Becker, 2002). But, as a matter of fact, in our exploration of more than 200 platforms in the web, we did not find any OIWP that performs and supports individuals and companies in all the phases of the innovation process (foresight/creativity/design). And in any case, the platforms for open innovation are focused with a high percentage (78%) in the design phase, and a very little number performs foresight.

### **Collaborative innovation model**

The Pisano and Verganti (2008)’s framework describes four collaboration models, that differ along two dimensions: openness (can anyone or just select players participate?) and hierarchy (who makes key decisions - one “kingpin” participant or all players?).

The four models are:

- elite circle (closed and hierarchical network): one company selects the participants, defines the problem, and chooses the solutions;
- consortium (closed and flat network): a private group of companies jointly select problems, decide how to conduct work, and choose solutions;
- innovation mall (open and hierarchical network): one company posts a problem, to which anyone can answer, and the company chooses the best solution;
- innovation community (open and flat network): anybody can propose problems, offer solutions, and decide which solutions to use.

The interaction of the system refers to the choice from the user who can decide how much to open or close his project, in other words to let only the employees of the companies to participate, to invite other users from the web, to let it open for customers and suppliers, to open it for all the world wide web, and so on; moreover, the participants are enabled to submit ideas and solutions, and they can choose how to share them using text, audio, video or other uploadable files. The administrator of the project can invite new users, remove others and change user roles during the course of the project. The interaction can be collaborative or not, in other words the platform can

favor the collaboration directly online or can be only a place where connect seekers and solvers and the collaboration is done offline. The 90% circa of the platforms does not favor online collaboration. Finally, as regards the time, the moment in which the collaboration occurs can be synchronous or the collaboration can be done not directly, but in an asynchronous way, then another aspect is if this collaboration occurs only one time or if the platform favor repetitive collaborations. Normally, the majority of OIWP's favor an asynchronous (93%) and a spot collaboration (95%).

As regards collaboration, the main limitations are connected to: Real collaboration online (exchange of expertise and two-way interaction); Roles; Reward system and Training.

In fact, for example:

- one of the most famous platforms, Innocentive, is based on the Challenge: it is a unique problem posted by Seekers (companies and no-profit organizations) to the Open Innovation Marketplace. If a solution is selected as "best" by the Seeker, the Solver receives a financial award, which varies per Challenge. But it presents a list of limitations: the platform let emerge only a single role (inventor and problem solver). The reward system for members is only monetary and there is no way for them to get trained. Moreover there is no collaboration activities among members.
- In platforms as Procter&Gamble, BMW, Kraft, the "Open" concept is limited from a one way interaction. It is difficult to establish non-monetary rewards systems.
- Finally, in platforms like IBM ThinkPlace, a web application for facilitating innovation through idea generation, collaboration, and refinement, anyone in the company can suggest ideas, comment on them, refine them, express support or even explain why the idea might not work. More importantly, the ideas that employees think have the greatest potential to grow the business, solve existing problems, or improve IBM's culture will automatically be considered. The limitations are that the collaboration is planned only amongst internal collaborator or inviting an expert and that there's no expertise exchange.

#### **TOWARDS AN ECOSYSTEM LOGIC FOR OIWP'S**

In order to identify the trends of design and development of OIWP's, we focused on a deeper analysis of twenty platforms with higher traffic rank and that refer to the last four years. **Errore. L'origine riferimento non è stata trovata.** **Errore. L'origine riferimento non è stata trovata.** shows an overview of these OIWP's.

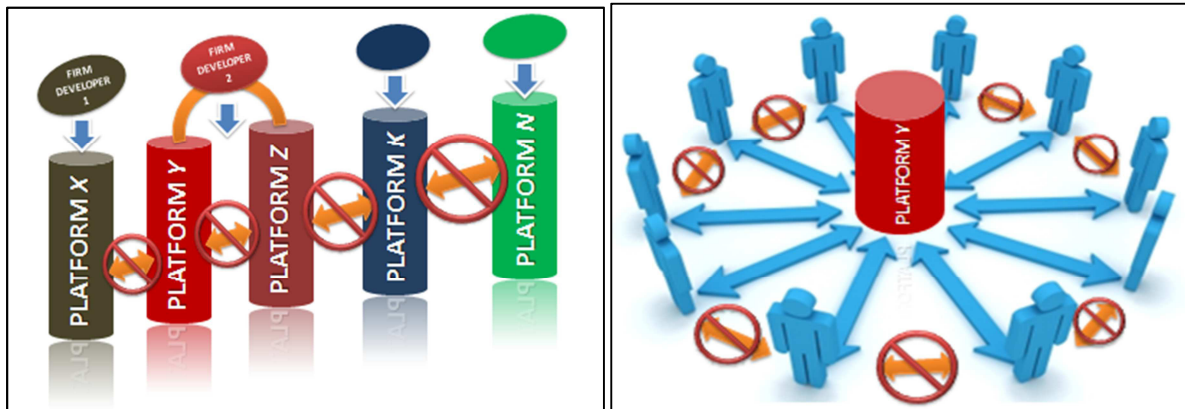
The trends that can be highlighted are:

1. Companies involvement;
2. Online collaboration and self-organization;
3. Ecosystem logic and shared fate.

**Table 2: Top 20 open innovation web-based platforms**

				COLLABORATIVE INNOVATION MODEL																INNOVATION PROCESS					
				Subject			Participation		Governance		Value integration		Interaction		Condivision		Time of collaboration		Collaboration transaction		Phase			Tools	
n°	NAME	WEBSITE	YEAR	individuals	big companies	SME	open	closed	hierarchical	flat	low	high	collaborative	not collaborative	trasparent	not trasparent	synchronous	asynchronous	spot	ripetitive	foresight	creativity	design	availability of tools	not availability of tools
1	Chaordix	<a href="http://www.chaordix.com/">http://www.chaordix.com/</a>	2009	x	x		x			x		x	x		x		x			x			x	x	
2	Crowdsprit	<a href="http://www.crowdsprit.com/">http://www.crowdsprit.com/</a>	2009	x	x		x			x		x	x		x		x			x		x	x	x	
3	Fellowforce	<a href="http://www.fellowforce.com/">http://www.fellowforce.com/</a>	2007	x	x		x			x		x		x	x		x		x			x			x
4	Hypios	<a href="http://www.hypios.com/">http://www.hypios.com/</a>	2010		x	x	x			x		x	x		x		x			x		x	x	x	
5	IdeaStorm	<a href="http://www.ideastorm.com/">http://www.ideastorm.com/</a>	2008	x			x		x		x			x		x	x		x			x			x
6	IdeaConnection	<a href="http://www.ideaconnection.com/">http://www.ideaconnection.com/</a>	2007	x			x		x		x			x		x		x	x			x			x
7	Ideacrossing	<a href="http://www.ideacrossing.com/">http://www.ideacrossing.com/</a>	2010	x	x		x			x		x		x		x		x	x			x			x
8	Innoget	<a href="http://www.innoget.com/">http://www.innoget.com/</a>	2009	x			x			x		x		x	x		x		x			x		x	
9	Innovation Exchange	<a href="http://www.innovationexchange.com/">http://www.innovationexchange.com/</a>	2008	x			x		x			x		x		x		x	x			x	x		x
10	InventNow	<a href="http://www.inventnow.org">http://www.inventnow.org</a>	2008				x			x		x		x		x		x	x			x	x		x
11	KiWi	<a href="http://www.kiwi-project.eu/">http://www.kiwi-project.eu/</a>	2007	x		x	x		x			x		x	x			x	x			x	x		x
12	LeadVine	<a href="http://www.leadvine.com/">http://www.leadvine.com/</a>	2009	x	x		x		x			x		x	x			x	x			x	x		x
13	Naymz	<a href="http://www.naymz.com/">http://www.naymz.com/</a>	2010	x	x		x			x		x		x		x		x		x			x		x
14	Ninesigma	<a href="http://ninesigma.com/">http://ninesigma.com/</a>	2008	x	x		x		x		x			x		x		x		x			x		x
15	Open Moko	<a href="http://www.openmoko.org/">http://www.openmoko.org/</a>	2008		x		x			x		x		x		x		x	x				x		x
16	Ponoko	<a href="http://www.ponoko.com/">http://www.ponoko.com/</a>	2007	x	x		x		x			x	x		x			x		x			x	x	
17	RedesignMe	<a href="http://www.redesignme.com/">http://www.redesignme.com/</a>	2007	x			x	x		x	x			x		x		x	x				x	x	
18	Sourceforge	<a href="http://sourceforge.net/">http://sourceforge.net/</a>	2009	x	x		x			x		x		x		x		x	x				x		x
19	Spigit	<a href="http://www.spigit.com">http://www.spigit.com</a>	2007		x			x	x		x		x		x		x			x		x	x	x	
20	My Starbucks Idea	<a href="http://mystarbucksidea.force.com/ideaHome">http://mystarbucksidea.force.com/ideaHome</a>	2009	x			x		x		x			x		x		x	x			x			x

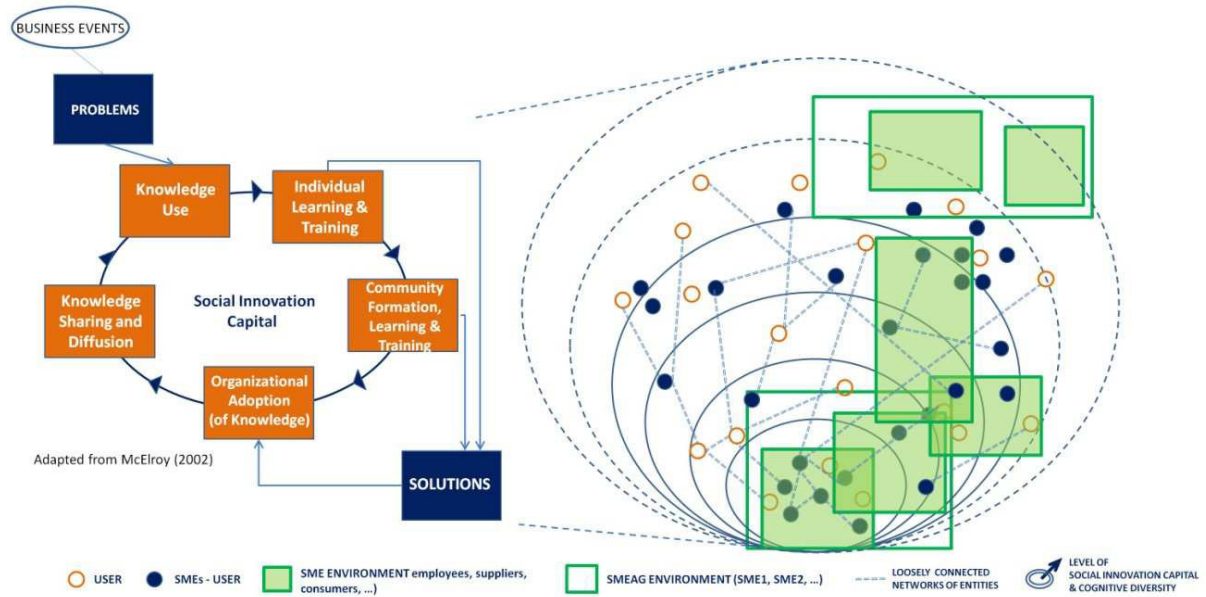
The main limitations of existing platforms (Figure 1) that are tried to be overcome by the most recent OIWPs, is the fact that they do not favor connection among platforms and do not favor collaboration among users. In fact, the “open” concept is limited from a one way interaction, with logics of challenge, crowdsourcing and intranet, where there remains still a vision of industrial type. Instead, a vision where the ecosystem logic is enhanced, the OIWP aim is to favor the network and the performance is based on alliances and relationships.



**Figure 1** - Main limitations of existing platforms: they do not favor connection among platforms

An ecosystem is a system whose members benefit from each other’s participation via symbiotic relationships (positive sum relationships). It is a term that originated from biology, and refers to self-sustaining systems. As it applies to business, an ecosystem can be viewed as a system supported by a foundation of interacting organizations and individuals - the organisms of the business world. “Like species in biological ecosystems, firms interact with each other in complex ways, and the health and performance of each firm is dependent on the health and performance of the whole” (Iansiti and Levien, 2004). Over time, they co-evolve their capabilities and roles, and the relationships established across different industries become more and more mutually beneficial, self-sustaining and generate added value. This is clearly the case for Silicon Valley with the entrepreneurial industry, the venture capital industry needed to fund the entrepreneurial industry, and Stanford University, supplying the human capital needed to develop innovative/creative ideas and technologies. For innovation, this analogy operates at many levels: firms, innovators, users, methodologies, and products are characterized by networks of interdependencies (very likely power law distributed) and ecosystem-like dynamics. The so-called Matthew effect dominates: “In an open, dynamic, scale-free network with positive feedback loops between hubs, the fit get fitter” (Ogle, 2007). More specifically, the innovative performance of a firm is a function not only of its own capabilities, know-how and expertise but also of its dynamic interaction with the ecosystem as a whole.

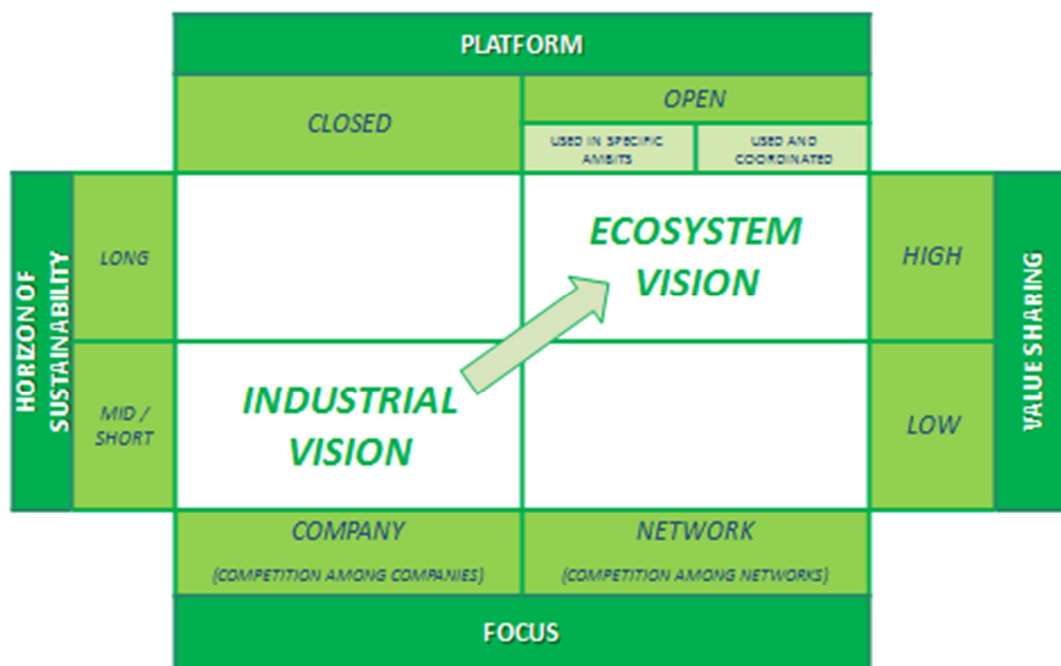
In this line, Snow *et al.* (2008) highlight that a community of firms represents a new breed of collaborative venture where a number of firms interact and exchange information and knowledge for a common goal. Moreover Pisano and Verganti (2008) consider open membership networks with flat governance structures as innovation community: a network where anybody can pose problems, offer solution and decide which solutions to use. Invariably, understanding the rationale, dynamics, membership roles, governance forms and performance of these emerging collaborative arrangements is essential.



**Figure 2.** Social innovation capital and cognitive diversity for self-organizing communities

Basing on literature and empirical analysis, it can be stated that the trend of the OIWP is toward an **ecosystem logic** (see Figure 3), and the roots to feed an innovation ecosystem based on web platforms are mainly three key-concepts:

- **communities:** this is constituted by distributed and loosely connected networks of users, producers, dealers, partners, customers, more in general by the stakeholders of the innovation, and become the new organizational unit of analysis of the innovation process and define the ecosystem of innovation;
- **self-organization:** generation of innovative ideas, the development of new product and the diffusion of innovations are carried out in parallel by self-organizing communities of actors;
- **cognitive diversity:** the key aspect that will define success or failure in discontinuous innovation projects is the amount of cognitive diversity (Van der Vegt and Janssen, 2003) that networks (or group of firms) will be able to form and manage.



**Figure 3.** Trend toward an ecosystem vision logic for OIWP

## THE iCOMMUNITY PROJECT

Thanks to the literature investigation and of the classification of more than 200 OIWP, we present the concept, design and undergoing development of an OIWP named iCommunity, projected to increase the innovation landscape of European SMEs and SMEAGs. It allows non-IT-experts end-users to initiate and/or actively participate in self-organized virtual communities which supports the generation of new trends, concepts and models in the frame of the development of new products and their business models by means of collective intelligence sharing among companies, people and intelligent software.

iCommunity will be a web-based platform supporting the new product development by means of the distributed collective intelligence both from firms, single experts and web-users. iCOMMUNITY platform wants to enhance SME specific innovative abilities in:

- using different tools and methodologies for new trend foresight, new idea generation, and design implementation;
- generating new trends, concepts and models about products, processes, or business models;
- creating self-organized communities which support development of new products and their business models by means of collective intelligence sharing web-application.

iCOMMUNITY is designed to become a collective innovation ecosystem (see Figure 4).



**Figure 4.** iCommunity ecosystem logic

## Basis

Many companies, and especially SMEs, wishing to adopt a collective innovation approach have not yet developed specific operational tools and well-assessed methodologies. In fact, companies need in order to reach and improve their innovation capabilities to lever on different areas, as:

- to facilitate their access to cognitive diversity and connection with different and far other companies and end-users in order to foster collaboration for innovation;
- to be assisted in being aware of the possibilities to access to far or hidden knowledge in order to learn building and developing social innovation capital: “the collective capacity of a firm to innovate” (McElroy, 2002:30). Moreover, he argues that social innovation capital “refers to the collective manner in which whole social systems (i.e. firms) organize themselves around – and carry put – the production and integration of new knowledge” (McElroy, 2002:32).
- to be helped in identifying future emergent technological and economic trends/discontinuities by developing network-based approaches to early perception of ‘weak signals’ and currently this type of analysis is being pioneered by some major companies and national security intelligence agencies;
- to manage creativity in the area of new product/service development to individuate new product or service ideas;
- to improve the design process in order to receive suggestions and co-develop a product or a service, and to study the related business models and especially to create a business ecosystem to support the design, manufacture and distribution of the product;
- to be helped in reducing the market risks associated with investment in innovation and R&D by developing distributed networks of external intelligence, which provide users’ feedback on the market potential of the innovation and in some cases (see Von Hippel) provides embryonic markets for the development of the innovation.

Companies may have a high innovation potential, but innovations to become successful must be adopted and spread into nowadays competitive and turbulent markets. Each single company often faces the market risk, after sustaining R&D costs, without any preliminary feedback from the users about the potential success of the product idea. Moreover, a single company needs a support and a connection to the entire business ecosystem related to its core business, because it cannot sell its products without being supported from other structures which cover its not-core areas.

### ***Design characteristics***

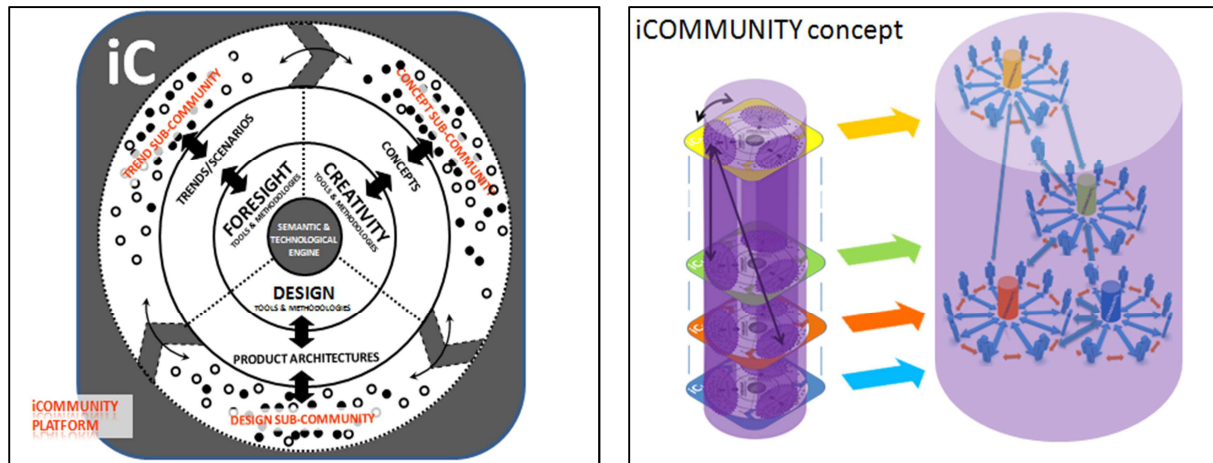
Companies, in order to achieve successful, repeated organizational innovation; access to learning and knowledge processing; access to cognitive diversity; have the possibility to be connected to foster collaborative projects, can leverage on web open innovation platforms. The present work helped in drawing the characteristics of a best of breed platform, basing on empirical state-of-the-art analysis of the platforms, and an investigation based on literature to highlight the best characteristics for each point. More specifically we claim that the most important characteristics to design our OIWP resulting from our analysis are:

- openness and collaboration: the platform performs crowdsourcing and triggers the formation of communities;
- presence of a semantic engine: it will give the possibility to set a system of alerts dedicated to news, innovation projects, new technologies, etc. relatively to the specific project the user opened or participate in; it will be possible also to permit a contacts research and to be suggested of the new connections with other actors of the supply chain;
- multifocused, dynamic and evolutionary communities;
- each of the three stages of the innovation process (foresight/creativity/design) to let outcrop n communities;
- presence of multi-roles and multi-level members profiles;
- a multi-output and multi-focus platform: it can simultaneously manage all the three categories of output (trends, concepts, designs) and multiple topics (unlimited, because they depend on the choice of the users) - there are not platforms that manage all the three stages of the innovation process.
- configurability: As the situations of open collaboration offer an array of choices and complex trade-offs, the main trait that characterizes the best of breed platform is its configurability:

configurability will permit the SME to choose, for example, referring to the “collaborative innovation model” criteria, the openness and hierarchy levels of the specific project and so to be an elite circle, a consortium, an innovation mall or an innovation community.

In order to enable community collaboration, the tools and approaches used are:

- the systems of reward;
- community revision;
- interaction;
- e-learning;
- training and certification.



**Figure 5.** *iCommunity concept*

The basis of iCommunity are in the three phases of innovation process and in favoring the building of communities and the collaboration among these communities, as shown in Figure 5.

The theoretical framework of iCommunity is subdivided into tangible and intangible nature: the building of a platform (configuration system, tools and methodologies and outputs) and the generation of many communities related to different projects on the other (members with and associated role and their activities). The theoretical framework core is based on mechanisms enabling community collective innovation and on a community meta-model, described using a semi-formal modeling language, as in Figure 6.

Finally, iCommunity can be defined as:

- Ecosystemic
- Multilayer
- Scalable
- Configurable
- System of activity-based

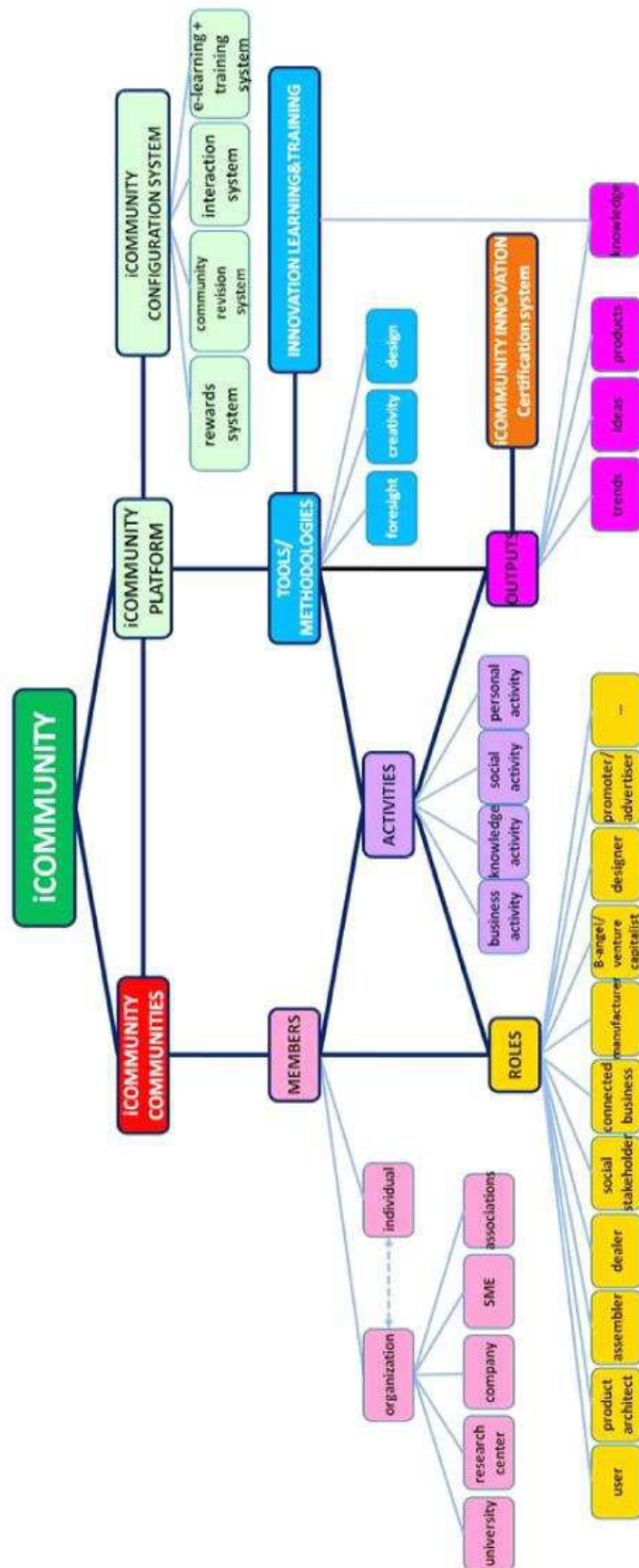


Figure 6. iCommunity UML model

## CONCLUSIONS

The ICT operational platform can be a powerful instrument to develop conditions for the creation of communities (bottom-up approach) supporting each phase of the innovation process.

This research contributes in this direction, mapping the web-based open innovation platforms that perform crowdsourcing and enriches the research field on the collaborative networks for innovation linking cross-fertilization, self-organizing communities and technology-transfer. Moreover the present work proposes a framework in order to comprehend how it is possible to create a collaborative network through web open innovation platforms. The present work in fact helped in drawing a framework to analyze OIWs, basing on a deep investigation of literature to highlight the criteria and on an empirical analysis of the platforms, to identify the state of the art and the trends of design.

The work is only a first step into a classification of OIWs. Moreover, from an academic viewpoint, the work identifies three main roots to feed an innovation ecosystem in the key-concepts of communities, self-organization and cognitive diversity; and from a practical one, it gives suggestions to companies wishing to adopt a collective innovation approach that have not yet developed specific operational tools and well-assessed methodologies.

The value of the work lies in identifying the criteria to build the framework, the main limitations of existing platforms and the trends. In literature, there is not any study that classifies the open-innovation or crowdsourcing platforms and highlights its best characteristics in order to push companies to participate in these open-innovation projects and to suggest them on which platform to rely best. As a matter of fact, in our exploration of more than 200 platforms in the web, we didn't find any Open innovation platform that perform and support individuals and companies in all the phases of the innovation process (foresight/creativity/design). Basing on literature and empirical analysis, it can be stated that the roots to feed an innovation ecosystem based on web platforms are three key-concepts: communities, self-organization and cognitive diversity. The new approach in innovation is due to the self-organized emergence of communities that act and transform the ecosystem evolving through the innovation phases (foresight, creativity, design) and time and creating an embryonic market, in which innovation generation and diffusion simultaneously grow and nurture themselves embedded in the innovation ecosystem.

Moreover, as the situations of open collaboration offer an array of choices and complex trade-offs, the main trait that can characterize the platform is its configurability: it has to give the possibility to adapt and change the content referring to the needs of the company and the context of innovation.

Finally, a platform designed with these concepts in mind has been presented. We highlighted the insight for designing a new AGORÁ for collective intelligence and emerging communities, able to facilitate the innovation process, to foster collaboration among users and to trigger structured proactive actions. In fact, iCommunity represents the backbone of the innovation ecosystem and lets companies to collaborate for identifying technological and semantic product trends; outcropping new product ideas; designing a tangible product; managing the subsequent diffusion process. The network based, collaborative and multilingual approach of the platform proposed represents a promising potential solution to the major constraints of companies' innovation, in terms of reduction of costs and time invested, increasing the capability in carrying the process for new ideas, increasing of the possibility to capitalize knowledge.

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