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e'LivingLab: The Science and Technology Parks and Living Labs binomial as an innoconnector for the creation of SmartRegions

Parallel Session 5

What are the STPs evolving into?

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Executive Summary

“Pigmaei gigantum humeris impositi plusquam ipsi gigantes vident” (Issac Newton)

The Science and Technology Park (STP) industry, as part of the Global Innovation Ecosystem, needs to evolve towards new citizen-centred innovation scenarios based on knowledge economy, where cities become a more active agent in the process of socioeconomic wealth generation within a given region and LivingLabs are a powerful mechanism to make that happen.

The upcoming innovation landscape which aims to help countries to overcome the current situation, requires the integration of all the innovation agents in a process of coopetition (cooperation competitive) to foster the creation of wealth and competitiveness.

This paper aims to define a new STP trend for the next future in which Livinglabs will be playing a crucial role for innovation production and therefore some new reformulation of knowledge production functions should be taken in consideration.

Science & Technology Parks: Evolution towards the Future

The Science and Technology Park (STP) industry, as part of the Global Innovation Ecosystem, needs to evolve towards new citizen-centred innovation scenarios based on knowledge economy, where cities become a more active agent in the process of socioeconomic wealth generation within a given region. This means that the current STP business model, and in some way that of SMEs too, should be redefined, along with their innovative financing models, in order to make them more sustainable and effective entities.

This evolution even gives rise to a new landscape, in which STPs start to become an innovation engine that, on the one hand, make it possible to design the cities of the future, i.e. Smart Cities, like (as William J. Mitchell wished to see) living organisms or very-large-scale robots, with nervous systems that enable them to sense changes in the needs of their inhabitants and external conditions, and respond to those needs[1]. On the other hand, they also act as facilitators help SMEs in their process of innovation generation so that they can successfully incorporate themselves on the market.

SME: the main driver in STPs

SMEs are by far the most important category of companies – only in the European Community there are more 25 million SMEs. SME is a highly diverse category and includes advanced innovative companies that are often working internationally, as well as less innovative suppliers and jobbers for whom the region is their market.

The role of advanced SMEs in the regional and national innovation system as creators of new products, services and markets, and as partners for larger companies is crucial, as is the strength of the regional innovation ecosystem that supports them.

Moreover, due to the globalization of markets, SMEs must take a more open and cross-border approach to business. As a result, they therefore need to constantly enhance their capabilities to innovate and get involved in international knowledge networks in order to survive.

STPs are currently playing a very important role in fostering the growth of SMEs by providing them with tools and an appropriate environment in order to facilitate the consolidation process. However, there are some elements that STPs should pay more attention to and which are crucial to strengthen the innovation generation process. These include: continuous support for the expansion of networks from a long-term perspective[2], creating an environment that stimulates the development of knowledge-base SMEs[3] or increasing the degree of encouragement tenants are provided with in order to establish localized linkage among Higher Educational Institutes[4].

From the point of view of SMEs, some of the fundamental factors hindering the realization of this innovation potential of SMEs (and in which STPs could play a very active role to overcome them) are[5]:

- An insufficient ability for the vertical integration of complementary competencies .

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1 Official MIT Obituary for William J. Mitchell Greg Frost, MIT News Office (http://web.mit.edu/newsoffice/2010/obit-mitchell), 2010

2 *Evolution of Technoparks: an instance towards Regional Boost for Developing Countries: Experience from Korean Technoparks*, Dr. Jaehoon Rhee, A S M Enamul Hassan and Rumilya Saitova, 2010

3 *A Brief Review of Science and Technology and SMEs Development in I.R Iran*, M. Molanezhad, Ministry of Science, Research and Technology (MSRT) Iranian Research Organization for Science and Technology (IROST), 2010

4 *Science parks in Japan and their value-added contributions to new technology-based firms*, Nobuya Fukugawa, 2005

5 *Living labs and open innovation policy in regions for the benefit of SMEs*, Hans Schaffers and Roberto Santoro, ESoCE Net, 2010

- SMEs must be organized in collaborative networks, which can aggregate pools of complementary resources and competencies.
- A lack of mechanisms and processes for validating the use that is made of business opportunities originated by the industry, especially if the targeted market is characterized by the classical technology-push or market-pull dilemma.
- Scarce availability and/or difficult access to knowledge resources that are necessary to support the innovation process within SMEs.
- An insufficient readiness to take part in collaboration on the part of SME workers, who are generally speaking not used to collaborating with other SMEs.

Innovation by Knowledge Spillover in STPs

In STPs, SMEs frequently find innovative solutions by interacting with one another. There is no specific methodology with which to induce the creation of new elements (products or services) by interplay and they mostly come about by serendipity. This sort of process is defined under the concept of "Knowledge Spillover" (KS), where knowledge and innovation are generated by proximity between individuals as a result of the exchange of ideas and their continuous interaction.

This is a fairly old concept. Indeed, Alfred Marshall[6] first defined the theory of Knowledge Spillover in 1890, and it was later strengthened by Kenneth Arrow and Paul Romer. In 1992, Edward Glaeser, Hedi Kallal, Jose Scheinkman, and Andrei Shleifer pulled together the Marshall-Arrow-Romer views on knowledge spillovers and accordingly named the view MAR spillover. These authors highlighted the effect produced by the exchange of ideas between employees of the same organization (internal KS) or between employees from different companies but within the same industry (external KS). Silicon Valley is a good example of a MAR spillover.

Additionally, two slightly different models appeared based on KS view: those put forward by Porter (1990) and by Jacobs (1969). The first insists that Knowledge Spillover is located in geographic concentrations of similar industries in a specialized but competitive perspective stimulates business growth and generates innovation.

Moreover, Jane Jacobs postulated the need for corporate diversity and interaction between employees of different but geographically close industries, in order to generate innovation and business growth (which could be considered the main foundation underlying Henry Chesbrough's more recent Open Innovation process).

It is quite clear that all three types of Knowledge Spillover can be identified in environments like Scientific and Technology Parks. In clusters, there will be MAR- or Porter-type models or Jacobs models in the most diverse convergence of different kinds of companies and industries (such as in our Science and Technology Park (STP) in Castellón: espaitec).

Moreover and from this perspective, in STPs Jacobs' model can be found in the entrepreneurship environment as a generator of business opportunities for the creation of new shared knowledge[7].

Fortunately, Knowledge Spillover can be explained using the Knowledge Production Function[8] (KPF), which can be represented by:

$$I_i = \alpha RD^{\beta}{}_i HK^{\gamma}{}_i \varepsilon_i \qquad (1)$$

where I stands for the degree of innovative activity, RD represents R&D inputs, and HK represents human capital inputs. It is needed to point out the factors ß and γ as elasticity factors as a measure of productivity of the inputs to the innovation process and indicate the

6 http://en.wikipedia.org/wiki/Alfred_Marshall#Bibliography_and_further_reading
7 *Knowledge Spillover Theory of Entrepreneurship*, Acs and Audretsch, 2006
8 *Issues in assessing the contribution of R&D to productivity growth*. Griliches, Z (1979). Bell Journal of Economics 10: 92-116

efficiency of R&D and Human Capital activities and thereby the quality of the innovation system in a region. Once we have a mathematical representation of a concept it is easier to analyse its behaviour when new factors are added to the formulae as we will see later on.

Variations of KPF could include the externalities associated with knowledge due to its non-exclusive and non-rival use[9]. In that perspective, social interactions (such as it could be with citizens, users,...) have economic value in transmitting knowledge and ideas, so Von Hippel1 explains that high context, uncertain knowledge, or what he terms sticky knowledge, is best transmitted via face-to-face interaction and through frequent and repeated contact.

It is necessary to reinforce the argument made by Jacobs2 by which the most important source of knowledge spillover is external to the industry in which the firm operates and that cities are the source of considerable innovation because the diversity of these knowledge sources (citizens) is greatest in cities.

These systems and change-oriented view of innovation fit in very well with the emphasis of open innovation and then main mechanism it utilizes to make it consistent: **The Living Labs**.

Living Labs as a Democratic Innovation streamflow

The concept of 'Living Lab' was first developed by William J. Mitchell[10] in the 1990s at the MIT labs in Massachusetts (USA) in order "to study people and their interaction with new technologies in a living environment". We can therefore state that Living Labs are citizen-driven open innovation ecosystems in real-life settings in which innovation is fully integrated in the co-creative co-design processes for new technologies, products, services, and societal infrastructures[11]. This approach allows the emergence of new spaces for interaction and knowledge exchange that will bring about a significant change of paradigm in the collaboration between SMEs which will, in turn, lead towards an Open Innovation scenario.

An interesting concept underlies the definition of 'Living Lab', i.e. that of **Open Space for Experimental Learning**, which needs some kind of analysis:

Open Space: The 'Living Lab' should be placed in open environments from the point of view of user interaction. In other words, we are talking about non-controlled environments in which users are led to present a specific behaviour induced against an experiment or prototype of a product or service.

Experimental Learning: Given the openness of the interaction, the products and services included in the 'Living Lab' are not final products but undergo continuous improvement over time due to the involvement of end users.

What can be stated from these instruments is that the user is a fundamental element in these open innovation methodologies (user-driven open innovation). Considering the course of events, it seems that Living Labs are destined to play a key role in opening up innovation within the framework of the European Union, as they provide a service to organizations, contribute to the continent's development strategies and give examples of good practice in the development of companies' innovative products.

To approach Living Labs conceptually, it seems useful to link the discussion to networked innovation in several relevant academic domains. In their current shape, Living Labs share the regional dimension of the economic perspective of innovation that is found in clusters or

[9] *Knowledge Spillovers and the Geography of Innovation*. Audretsch & Feldman. Handbook of Urban and Regional Economics V4, 2003

[10] http://web.mit.edu/newsoffice/2010/obit-mitchell

[11] *Open Living Labs PPP, Strategic Innovation Ecosystems and Enabling Actions for Addressing Societal Challenges and Improving European Competitiveness*. European Networks of Living Labs. 2011

innovative milieus[12]. Living Labs can play a role in the coordination of different players in the innovation systems, especially for technology transfer, which points to an operational and organizational role of Living Labs.

Benefits of Living Labs

A set of interesting benefits that the different stakeholders can gain from deploying user-driven open innovation under Living Lab methodologies can be summarized as follows[13]:

- For the **users in their role as citizens and community**: to be empowered to influence the development of services and products which serve real needs, and to jointly contribute to savings and improved processes through active participation in the R&D and innovation life cycle.
- For the **SMEs, including micro-entrepreneurs as providers:** developing, validating and integrating new ideas and rapidly scaling up their local services and products to other markets.
- For the **larger company**: making the innovation process more effective by partnering with other companies as well as end-users, which are rooted in active user experiences, increasing "right the first time".
- For **research actors, the economy and society:** stimulating business-citizens-government partnerships as flexible service and technology innovation ecosystems; integrating technological and social innovation in an innovative "beta culture"; increasing returns on investment in ICT R&D and innovation (what we prefer to call **ROI2S: "Return on Investment to Society**").

User role in Open Innovation environments

Traditionally, idea-generation techniques are based on customer input and on the needs of a specific set of customers. The "lead user" (LU) process takes a different approach by collecting information about both needs and solutions from the leading edges of the target market and from markets facing similar problems in a more extreme form[14].

[12] *State of the Art of Living labs*. The Electronic Journal for Virtual Organizations and Networks, 2008
[13] *Living Labs for user-driven open innovation*. Directorate-General for the Information Society and Media, 2009
[14] *Performance Assessment of the Lead User Idea Generation Process for New Product Development*, Gary L. Lilien (Penn State), Eric von Hippel (MIT), Pamela D. Morrison, University of New South Wales et al., 2002

LU are defined as users of a given type of product or service that combine two characteristics: (1) they expect attractive innovation-related benefits from a solution to their needs and are hence motivated to innovate, and (2) they experience needs for a given innovation earlier than the majority of the target market[15].

Von Hippel[17] suggests four-steps process in order to incorporate LU's into marketing research:

1. Identify an important market or technical trend
2. Identify lead users who lead that trend in terms of (a) experience and (b) intensity of need
3. Analyze lead user need data
4. Project lead user data onto the general market of interest.

So, we are changing the trend of innovation generation with the involvement of skilled users that will ensure the success of product or service market penetration.

Science & Technology Park+LivingLab philosophy = Innovation Park binomial

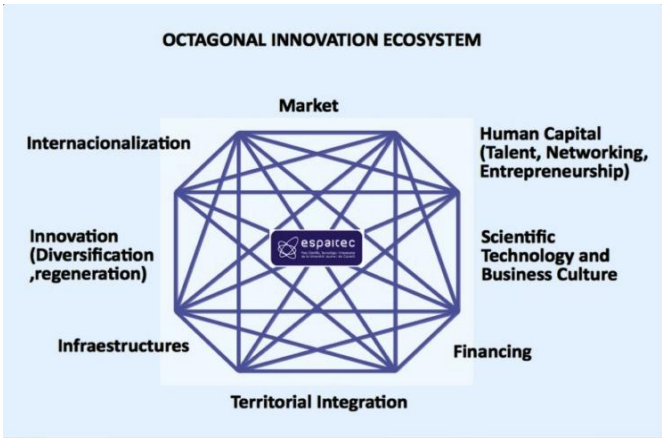
At this point of time the figure of Living Labs emerges as a keystone for a highly value-added joint venture with STPs that will enrich the capacity of a STP to act as an Innovation Engine for creating smart regions and will be the cornerstone of the competitiveness strengthening in the regions.

How do both elements interact to behave as a binomial?

STPs and Living Labs are becoming a perfect combination and complementaries as a innovation entities providers.

STPs act as a ideal resources provider to create the appropriate "good-luck" conditions for the Living Labs in order to host successfully any project landed. From the STP perspective, we need to base our approach on the **Global Octagonal Innovation Ecosystem** to be able to set up a great place to innovate, such as Living Lab could be.

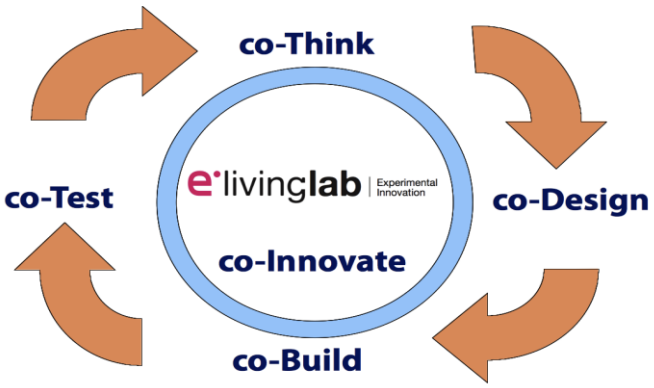
[15] *Lead Users: A Source of Novel Product Concepts*, Management Science 32, Eric von Hippel (Jul, 1986).



Some of the elements that we should consider inalienable and inherent to the STP are the companies (start-up, spin-off, spin-out, grow-up and consolidated) which the need some support to be successful on the innovation market with new products or services. In general terms, companies develop their products or services and, just few of them, lean on final users for test-bed processes in order to understand potential problems. However, at that point of time the product has already been developed and only allow, due to budget restrictions, light and few modifications. Nevertheless, STP becomes a strong innovation generator environment.

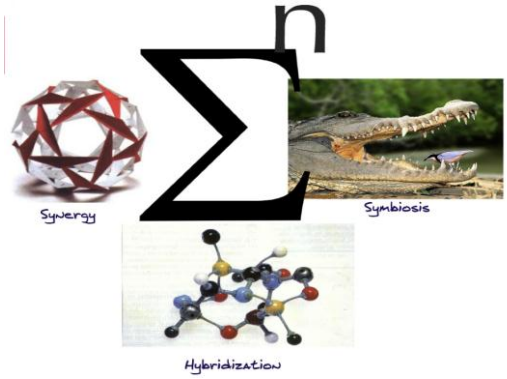
When Living Lab approach is included to the innovation generation equation a change of the perspective is required, for which a new vision of the collaboration between the companies as product or service provider and the final user (or even coopetition[16], term re-coined several times since 1913 that describe the cooperative competition):

The 5 Co's



The coopetition reached by all the agents involved in the innovation environment will produce a significative effect: **"Symbiotic Synergy"**, that is to say collaboration in the development of new innovative products and services (**Synergy**) where the final result will benefit to all the parts participated (**Symbiotic**). In addition to this, a particular derivative will be produced: **the hybridization,** that will spark extremely innovative and creative solutions with much more energy by means of the participation of agents from a very different skills.

[16] *Co-Opetition : A Revolution Mindset That Combines Competition and Cooperation,* Adam Brandenburger, Barry Nalebuff 1996



Indeed, Living Labs are considered convoy projects[17] focused on two effects produced by the interaction between all the innovation ecosystem agents (bearing in mind its MIMO – 'Multi-Input, Multi-output' – nature):

- Cross-pollination among the agents and entities involved is also inherited from the cluster model.
- Social capital generation[18], as a consequence of the exchange of knowledge and information among all the participants in the project.

Another interesting interaction between STP and Living labs is the one that enforcing "Soft-landing" approach that are being launching by several STPs. The access to an innovative environment with high-technology resources encourages big firms to be interested in being linked to the STP as a innovation facilitator.

Sustainability of STP and Living Lab binomial

From the sustainability perspective, PPPP Public-Private-People Partnership becomes a strong resource for this sort of tandems: STP and Living Labs from financial point of view. Therefore, new innovative financial approaches have to be foreseen to cope with the future of all innovation processes. As you can see, we are including in the Partnership a new element "People" .

We strongly believe that Innovation Parks (we could name it as combinations between legacy Science and Technology Parks and Living Labs) require much more the involvement of the Society as financial source. For that approach, Society has to be convinced that all the products and services developed under this element with the help of citizens (students, researchers, …) will improve the quality of life of the people.

Enhanced Knowledge Production Function

The analysis of most theories on innovation put the company as the main starting point for the process. In the knowledge production process there are several actors involved that will

[17] *The Convoy Model as a new "glocal" growth accelerator metaphor for the economy in the next decade*, IASP 28th World Conference Copenhagen 2011, Juan A. Bertolin et al.

[18] I*ntra-organizational social capital in business organizations: A theoretical model with a focus on servant leadership as antecedent*, Pablo Ruiz, Ricardo Martínez, Job Rodrigo, Ramon Llull Journal of Applied Ethics, (2010)

impact on the innovation activities of a company: other companies and public R&D institutions and Griliches[19]in 1979 already introduced the representation of those actors contribution to productivity growth by means of the knowledge production function (the one already mentioned in (1) at the beginning of this paper).

However, there are some additional elements such as the interaction, the density, and the quality of the network between those elements which actually have a specific weight in the equation[20]. This sort of influence is knowledge spillovers (KS). So far, KS has focused on the flow of relevant knowledge from other actors (companies and institutions) that may be associated with all the kinds of interactions however one actor was missing in the equation: **the user experience**. The stock of knowledge is exogenous and embodied in people[21] .

Griliches Knowledge production function is strong in the consolidated companies due to their high R&D investment so it is particularly weak when SME are included in the sample. Nevertheless, SMEs form an innovative knowledge factor with reduced or no R&D investment so KS plays a very important role in their production growth. It is difficult to measure the knowledge generated by spillover due to the user contribution, at least mathematically but it is possible to establish a relationship empirically. Therefore the term RD (R&D Input) should be expanded to include such a new stock of knowledge.

Key Performance Indicators (KPI) in Innovation Parks environments

Drucker's main quote was: "If you can't measure it, you can't manage it" and in any innovation milieu (Science & Technology Park, Living Labs,...) it is necessary to identify the main Key Performance Indicators (KPI) to establish an optimum track toward the excellence.

Although there is no consensus en terms of Performance Indicators either for STP or Living Labs we consider a minimum set of KPIs based on an innovative milieu that are required to evaluate the impact of both agents when acting together.

Measuring innovation is a problematic process because conflicts with the process itself, it is called "innovation uncertainty principle"[22], that is to say as many of the way we might want to measure innovation can significantly impede the innovation process itself due to its nature of discovering, intelligent risk-taking and uncertainty. Therefore, it is necessary not only determining a set of quantitative indicators but qualitative as well that will complement the truly value of the innovation.

On the one hand, we should consider some indicators that will arise as a consequence of STP presence, and in some way, will impact the region production growth:

- Financing volume (Private – Venture Capital and Public – European or other sources) for building the appropriate infrastructures for the running of LivingLabs that will impact on the GDP of the territory
- Number of new companies created at the STP as a consequence of LivingLabs projects.
- Number of R&D groups involved in projects together with SMEs located at the STP

[19] *Issues in assessing the contribution of R&D to productivity growth*. Griliches, Z (1979). Bell Journal of Economics 10: 92-116

[20] *Measuring the Quality of Regional Innovation Systems: A knowledge production function approach*. Fristsch, M. 2002. International Regional Science Review 25,1

[21] *The Knowledge Spillover Theory of Entrepreneurship*. Acs Z.J. , Audretsch D.B., Braunerhjel P., Carlsson B. (2006). CESIS Electronic Working Paper Series.

[22] *Innovation Metrics, the Innovation Process and how could be measure it*. (2008) Morris L.

- Number of Convoy projects developed as a consequence of the big companies attraction to the STP environment.

On the other hand, the interaction by means of Living Labs agent will require to measure the evolution of some important factors such as:

Quantitative:

- Number of high skilled jobs created due to projects at LivingLabs (women, men, R&D, training...)
- Number of Projects executed (per sector) in the LivingLabs
- Number of new Projects identified as derivative of the original ones due to the knowledge spillover processes and collaboration among the active agents (companies, institutions, users).
- Number of private companies and public entities involved in LivingLabs projects
- Number of Patents registered, licensed, as a project consequences
- Ideas Management: Number of Ideas presented, developed
- Number of new customers due to the interaction with LivingLabs projects
- Number of new products and services developed by the interaction among companies and users.
- Time to market for the new products / services
- Patents applied for and granted

Qualitative:

- How do the projects will improve the quality of life of the society.
- How do the projects solve current needs of the society.
- How are the people encouraged to participate in the LivingLabs projects sharing their ideas.
- How are the customers' needs understood during their involvement in the Livinglabs projects.
- How is possible to balance the incremental and breakthrough projects.
- How are the companies flexible enough to modify original designs once the customer is involved the projects.

Conclusions

A brief snapshot of the current landscapes in innovation milieus has been taken and two main active agents are identified: Science and Technology Parks, as high value-added services provider, and LivingLabs as the Customer Experience promoters to generate innovative products and services.

It has been clarified the main issues that the tandem STP + LivingLabs will face, however it is clear that the combination STP+LivingLab will be able to foster the economy is any region and its development will be citizen-centred, that is to say that the citizen will come back to their original position in the centre of Global Innovation Ecosystem.

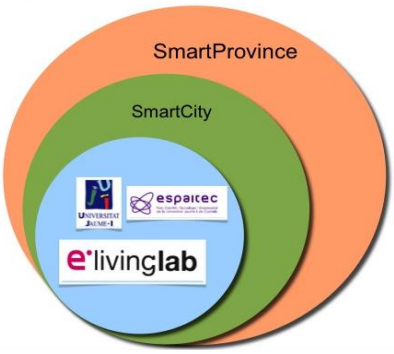
From our point of view, it is extremely necessary to establish the correspondent innovation bridges among all the parks and LivingLabs.

Case Study: e'livinglab of espaitec

e'livinglab | Experimental Innovation

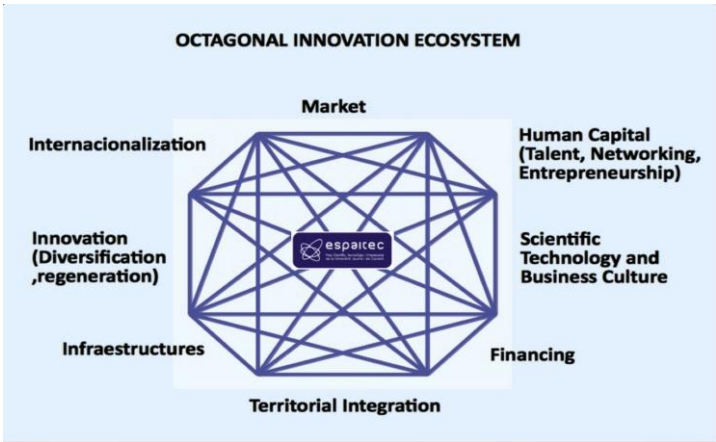
Espaitec, as a connector with the Global System of Innovation and a transducer between academia and businesses, reinforces its mission by providing an ideal environment in the province of Castellon called the **e'LivingLab,** an instrument that will strengthen, whenever possible, the cooperative development of innovation across all the socioeconomic agents in Castellon. Living Labs are, per se, drivers of innovation and ensure the companies related to this initiative have a highly successful impact on the market through the end-user involvement at all stages of product development, i.e. co-design, co-creation and co-testing.

A **Proof of concept** phase will extrapolate the methodology and several of the projects in the Living Lab to towns in the province of Castellon. Thus, Smart Cities and a Smart Province will be constituted through deployments such as Rural Labs initiatives, which are extensions of the Living Lab but implemented in rural areas, where there are already many success stories throughout Spain.



Espaitec is now directing the implementation of the **e'LivingLab** on the campus of the Universitat Jaume I in Castellon. This involves transforming the current campus into a so-called **Smart Campus**, in which products and advanced technology will be made available to the university community to improve the quality of life in the area. It will also get university members involved in the development of innovative products through their participation and feedback as end users (democratization of innovation). This is what might be called "**Symbiotic Crowd-sourcing**" because all participants will benefit from the results and the results will be the consequence of the participation of all the Campus citizens.

The most important capability of our LL (**e'LivingLab**) is the fact that it is created by an STP to foster hybridization among all the LL participants, and not only the interaction between companies and customers; this is the characteristic that makes our LL special. The creation of an environment where different companies and R&D groups (from the University and also from companies) are designing and developing products with co-creation user support sparks interaction among all of them to generate more extreme innovation at the same time when new synergies are created.



The STP is a great place to grow and our **octagonal ecosystem of innovation** also makes it the most suitable arena to promote innovation among the companies involved (both physically and virtually) in the STP. And the Living Lab is a great mechanism with which to do it. We are using the example of our **e'LivingLab** as a **Convoy Project**[23] **in the fashion of the "glocal" growth accelerator of the Cluster Model by Porter**.

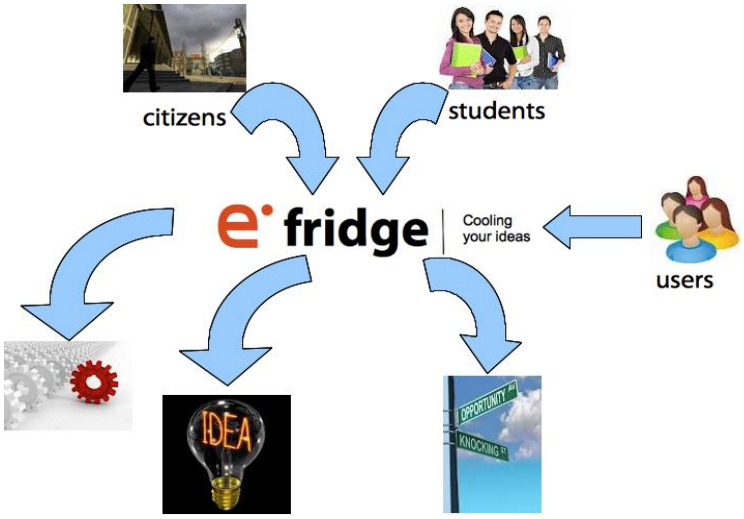
The advantage of developing a Living Lab in the STP is that, in this scenario, several actors are involved in the co-design of new products, so extreme innovation is guaranteed due to the direct and constant interaction among all of them. That is one of the key elements of "openness".

In this environment (where the University – as the main client – is the owner of all the prototypes developed by all the companies in the LL), the IPR principles are managed and ensured by the University.

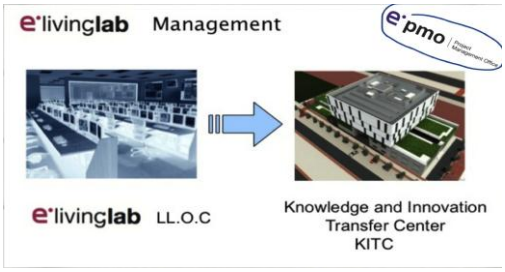
E'LivingLab is fully open to new investors and partners that would like to participate in the projects. The main principles to be applied here are those that highlight the requirement that a Living Lab is an innovation environment rather than a commercial one, and so investors and partners should be aware that their involvement is part of the process of constructing the LL.

In order to obtain feedback and interaction from the users, a mechanism of interaction called **e'fridge** has been developed where, by means of a web platform, all the actors will be able to propose new suggestions (like an incubator of cool ideas) for improving the **e'LivingLab**. These proposals are submitted to a vote by all the participants before they can be implemented.

[23] *The Convoy Model as a new "glocal" growth accelerator metaphor for the economy in the next decade*, IASP 28th World Conference Copenhagen 2011, Juan A. Bertolin et al.



It is essential to install an appropriate monitoring and surveillance system to analyse user behaviour and interaction with every prototype installed in the LL. In such a case, the acquisition of a high-technology system of wireless webcams with audio has been budgeted. The data will be collected in the main Living Labs building: **[CI]2 (Centro de Intercambio de Conocimiento e Innovación – Centre for the Exchange of Knowledge and Innovation, CEKI)**



In an initial phase, the **e'LivingLab** will be sustained by means of public investments from the Spanish Ministry of Science and Innovation and Universitat Jaume I (we have been granted almost 1 million euros to launch stage 1 of the **e'LivingLab**). Thereafter, in the following phases, plans have been made to develop the corresponding LL business and financial model based on the results obtained from the current investment. This is due to the fact that there are already big companies interested in joining the LL to design and test their products in a real environment.

Although the scope of espaitec, as the Science and Technology Park of Castellon, covers the whole of the province of Castellon, Phase 1 of e'LivingLabs will only be built on the University Campus (15 000 students and 2000 researchers as potential users). However, the aim of the later stages of e'LivingLab is to extend its activity to the rest of the city of Castellon and then on to the province in order to build Smart Cities and Smart Provinces.

Moreover, the strategic plan of **e'LivingLab** includes participation in activities related to Future Internet and the Internet of Things, based on the projects that we are currently carrying out.

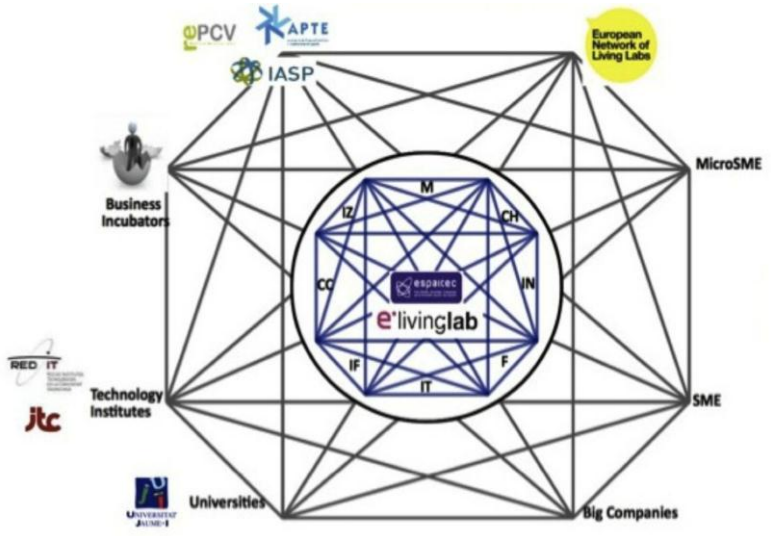
As mentioned before, **e'LivingLab** Phase 1 will be run on the University Campus and designed mainly for the University populace. Accordingly, we have designed a set of projects, up to 16, that will help to improve the quality of life on the Campus, for instance:

- To control water consumption and efficiency in the gardens by means of a set of humidity sensors. This will help the Campus maintenance teams to take care of the gardens in a better way.
- To control for a potential outbreak of legionellosis in the swimming pool and water containers at the University by means of some automatic high-speed legionella detection kits. This will be used by the Health and Prevention Office at the University.
- To control the level of air pollution (carbon footprint) on the Campus caused by cars. This will be used by Health Prevention at the University.
- To manage the books on the Library shelves via RFID in order to make it easier to detect missing books, control lending, etc. This will be used by all the Library users.

From the **e'LivingLab** perspective, there will be a dynamic bidirectional exchange between the LL environment and all the actors involved. On the one hand, the aim of **e'LivingLab** is to provide the best scenarios for each actor:

- In the case of owners such as espaitec, Science and Technology Park, **e'LivingLab** will become one of the best resources for generating wealth in the region (the main mission of espaitec), where all the agents of the innovation ecosystem will be committed.
- From the investors' point of view, **e'LivingLab** is a good mechanism for generating new business opportunities by means of co-creation and cooperation processes and thereby ensuring return of the investment (ROI).
- For all the partners, **e'LivingLab** is a good solution for helping in the co-design and co-development of their products and also a great opportunity to identify cross-pollination among all the partners in order to generate innovation.
- Finally, the main advantage of **e'LivingLab** for the user is the fact that it is a highly dynamic environment where new ideas can be incubated and developed thanks to the contribution of the users.

On the other hand, the best contribution of all the actors to the Living Lab is their support to foster its growth by generating new collaborations and new projects.



The **e'LivingLab** aims to cover the full life cycle of products and services, from their design to the final test step, and the user will be involved in all of them.

Espaitec, through the **e'LivingLab**, has been part of the ENoLL (European Network of Living Labs) since May 16, 2011, when it was presented to the rest of the network and the European authorities in Budapest during the Hungarian EU presidency. Currently, espaitec is Board member of EnoLL.

ENoLL aims to bring together all the European Living Labs (initially its focus was in Europe but today it includes 38 Living Labs from other continents) in a community that has already reached 274 members and has developed a sustainable strategy for the generation of innovation in a systematic way. It was founded in 2006 under the auspices of the Finnish EU presidency and currently has unconditional support from the European Economic and Social Committee because they have realized the enormous value in the process of building a competitive and productive innovative environment.