ENoLL
Positioning paper

Living Labs as needed instruments for
citizen science actions

European
Network of
Living Labs

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Living Labs as needed instruments for citizen science actions

<u>Name of the organisation:</u>
European Network of Living Labs (ENoLL): European network legally represented by its international non-profit association (ENoLL ivzw).

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INTRODUCTION

1 Living Labs opening up science to society: from identifying problems to delivering solutions
(The fundamentals of Living Lab methodology and its role in the democratization of science)

During the last years there has been a huge shift from a product based economy to a service economy, especially with digital services. More bottom-up and collaborative innovation processes have started out in many European and non-European countries, also thanks to the disruptive contribution of the so-called Living Labs.

Living Labs refer to user-centred, open innovation ecosystems based on a systematic user co-creation approach integrating research and innovation processes in real-life communities and settings. In practice, by placing the citizen at the centre of innovation, the living labs have shown an ability to better mould the opportunities offered by new ICT concepts and solutions to specific needs and aspirations of local contexts, cultures, and creative potentials.

Living Labs develop activities and provide services such as ideation, analysis, design, deployment, use, evaluation, research and management of innovation in real-world convergence of different forms of research and practices. They can have different typologies (top-down vs. bottom-up, driving-party roles: Living Labs as providers, users, utilizers, and enablers), and deliver activities in many different topics and domains, from health to culture, manufacturing and many others. During the last years Living Labs have offered a research and innovation platform over different social and cultural systems, cross-regionally and cross-nationally, to improve community life through participatory scientific and innovation actions.

The living lab approach, intrinsically flexible and adoptable in various contexts, offers benefits to universities, users, developers, public administrations and research centres. From a territorial perspective living labs can help European regions and cities to valorise their respective economic niches and competitive advantages in the perspective of Smart Specialisation. Living Labs also offer concrete opportunities for science to develop policy and practice around co-creation, active user-engagement, real-life experimentation, and a quadruple helix approach while collaborating with the main societal actors.

Since their inception Living Labs have put in contact society and its various representatives with the scientific arena, making science more understandable and closer to people's needs. These organisations spread homogeneously all over Europe, strived to support the innovation process for all involved stakeholders, from manufacturers to end-users, from research/scientific actors to public actors like cities or regions, with special attention to real users, having a key role in democratizing science and connecting R&I to society.

2 ENoLL developing citizen science paradigms
(Introduction of ENoLL to overview our role in linking up science and society)

During the last years the development of a new innovation paradigm connecting science and society has been guided by Living Labs and strongly supported at European level by the European Network of Living Labs (ENoLL). Founded in 2006, ENoLL has a key role in coordinating international Living Lab activities as well as sharing and spreading Living Lab know-how in Europe and beyond.

This network has historically recognised over 400 living labs from around the world maintained by municipalities, universities, regions and companies acting also as the development and piloting partners. Of these, 150 make up the core for piloting European industry and innovation policy, and are involved in in-depth cooperation with regions and the European Commission's Directorates-General. 80% of ENoLL members are based in the European Union member states, present in 20 of the 28 EU member states, and **with over 60% of members being Universities, Higher Education Institutions and Research Institutions.** Full list of members can be found here.

The ENoLL network aims at creating pan-European experiments and prototypes for new markets, based on the Digital Single Market. It is an open engagement platform where new business models can be co-designed, experimented and developed adopting a quadruple helix approach. ENoLL living labs combine European vertical specialisation domains (health, smart cities, creativity, education etc.) with horizontal and territorial specialisation.

The ENoLL international non-profit association, as the legal representative entity of the network, was founded in 2010 and is headquartered in Brussels. The ENoLL association supports the evolution and the uptake of the Living Lab paradigm throughout Europe and worldwide, contributes to the creation of a dynamic, multi-layer and multidimensional European Innovation Ecosystem, and facilitates the cooperation and the exploitation of synergies between its members and external stakeholders. As a legal entity, ENoLL international association focuses on facilitating knowledge exchange, joint actions and project partnerships among the members, promoting living labs and enabling their implementation worldwide, influencing policies, highlighting the role of Living Labs for society and international scientific community.

ENoLL represents the OSPP stakeholder group of universities and research organisations, not only in their role of implementing and promoting excellence in science and research but also building bridges to society by developing and orchestrating public-private-citizen collaborative innovation platforms to address local, European and global societal challenges in multiple areas such as Health and ageing, SME competitiveness and job creation, energy efficiency, resource efficiency, in the context of new digital technologies, digital societies and digital economies.

ENoLL is strongly committed to strengthen the following lines of action (and supporting them all):

• Fostering Open Science by collecting best practices about how citizens and end-users benefit from research, as this is one of the main focus of those Living Lab members hosted by Universities and Research Institutions.

• Embedding Open Science in society by supporting further work to make science more responsive to wider societal needs and get citizens and end users more engaged through living labs, maker labs, city labs, and in general the lab movement as an instrument to bring science and research closer to society.

• Removing barriers for Open Science by integrating RDI with learning and Living Labs. Fostering learning methods based on innovation co-creation and experimentation and increasing researchers' understanding of what excellent research and open science/open access is.

3 Epitomising the Living Lab approach - Case studies from ENoLL research and innovation ecosystem

The following eight ENoLL Living Lab case studies serve as examples of ENoLL research and innovation ecosystem. More detailed descriptions of the Living Labs cases can be found as annexes (1-8).

3.1 Bird Living Lab: Technological innovation and specialization in a smart territory

Bird Living Lab, situated in the Biosphere Reserve of Urdaibai (Basque Country), is the local, national and European hub in developing technology for nature monitoring with the aim of adopting effective public policies in environmental management and biodiversity, and in smart communities' specialization.

Bird LL's mission is to:
* Lead a network of exchange of goods and services in the field of ornithology and derivate tourism
* Co-create, test and validate ICT products for environmental management and derivate services and scale them up to new markets.
* Create a community of knowledge in nature monitoring, environmental management and smart communities.
* Generate a dynamic launching of innovation and new business structures in this area, allowing the generation of an emerging sector in which Europe can be leader.

Bird Living Lab is a best in class example of the potential entrepreneurial smart discoveries that can occur from a combination of a territory's assets and opportunities at local and international level. In addition to research activities, Bird Living Lab contributes to generate returns in smart economy and social terms. Bird Living Lab has provided a new way of open innovation development, re-thinking about the technology developed, giving new uses and expending their potential market to new sectors and countries, generating new business opportunities.

3.2 Botnia Living Lab: Open Research and Innovation

Botnia Living Lab focuses on human-centric research, and the development and innovation of new ICT-based services. Botnia started in 2000 and has matured from a test-bed to a real-life laboratory. Botnia Living Lab is constantly being developed further in close cooperation with end-users and stakeholders as well as researchers at Luleå University of Technology. It has 6000 listed end-users

found across Sweden that are engaged in various ways in the total process from need-finding and idea-generation, through concept-development and prototype/usability testing to service piloting.

For the process of stakeholder involvement Botnia Living Lab has developed the FormIT methodology, an iterative and interactive process in several steps for stakeholder involvement in all phases of the innovation process of an IT-based service/product - from need-finding to beta-trial and pre-market launch. For the stakeholder involvement, it is very important to recruit the right stakeholders in accordance with the purpose of the innovation. With the support of Botnia, the right stakeholders can be mobilized for the purpose. When running an innovation process with stakeholders involved, different motivators are triggered to get different stakeholders on board and to stimulate their actions together with easy communication and clear descriptions on what they should do, when and how.

3.3 Laurea Living Lab

Laurea (www.laurea.fi) is a R&D oriented university of applied sciences. Laurea operates in the Helsinki metropolitan area and it is focused on service innovations. Laurea's strategic choice is to integrate its three tasks - education, R&D and regional development. It has created the Learning by Developing (LbD) model as a tool for reaching its strategic goals and implementing them in practise.

Through its several locations and its LbD-based innovation process Laurea acts both as a host organisation for a few Living Labs, and as an innovation service provider in Living Lab and Test Bed context. The focus of R&D is welfare, knowledge intensive business services and social responsibility.

Working in Laurea's R&D projects is based on cooperation of companies, 3rd sector, public sector and universities together with end users. The basis for R&D is a holistic view of well-being which provides sustainable direction for businesses and for the development of the entire service system. End users are developers during the whole R&D process. Students are developers and creators of new professional knowledge together with other actors.

To facilitate professional knowledge creation and rich interaction Laurea operates in several development environments, including Active Life Village (former Well Life Center) and BarLaurea. Action research approach and LbD-model are the main instruments for user involvement, as well as 3rd sector's active role in the projects. Research and data collection methods and tools vary from project to project, including ethnographical methods, participatory observation, interviews and focus groups.

The LbD –model with Laurea's 8000 students is an essential R&D resource which enables rich interaction with end users. It also makes the LivingLab less dependent on project financing.

3.4 Library Living Lab

The Library Living Lab – Barcelona (L3), is an open, participatory, experimentation and co-creation space, situated in the public library "Miquel Batllori" at the Volpelleres neighbourhood of Sant Cugat del Vallès, Barcelona, Spain. This Living Lab is a genuin bottom-up implementation of a people/public/private scheme.
The laboratory was developed as a joint initiative between the Association of Neighbours of Volpelleres, the Municipality of Sant Cugat, the Provincial Council of Barcelona, the Universitat

Autònoma de Barcelona, and the Computer Vision Centre, which is coordinating the Living Lab activities.

"The mission of L3 is to explore how technology can transform the experience of users, enable new services and applications in the cultural domain, and foster research and innovation activity through promoting the active and open participation of all stakeholders in the innovation process."

The Library Living Lab is an actual laboratory and a thematic Living Lab. It is positioned by design and by definition firmly within the culture domain, and is defined by the particular context of libraries and archives. The lab's focus is on technology-based solutions and on how technological advances can be meaningfully exploited within the cultural context.

L3 is the result of a bottom up initiative from the very citizens of the local neighbourhood. It was born by the restless drive of the local population to improve their area and is a fruit of local awareness. L3 was ideated jointly between the Association of Neighbours of Volpelleres (the area where the public library "Miquel Batllori" is located) and the Computer Vision Centre, a research institution in Barcelona. L3 is setup within a flexible space, designed and constructed from the beginning in order to host such an advanced infrastructure, responding both to technology challenges (easiness to create new installations) and to architectural challenges (participation friendly, open to users, respecting the character of a public library).

3.5 Guadalinfo SMARTLAB: Inclusive and open model for Smart scientist strategies

The current development of policies and activities related to smart cities technology is reaching a high degree of maturity. On the other hand, the development in the cities is not accompanied by a similar development in rural areas. This is for example the case of Andalusia, a region in the south of Spain, the largest in terms of population and percentage of population in rural areas, which has stabilized over recent years.

This gap emerges as an opportunity for Guadalinfo Living Lab network, and for Living Labs in general, because of their capillarity and the ability to influence the regional policy makers. Guadalinfo is the perfect instrument to fill the gap by linking high-tech Smart cities productions to rural and citizen needs. Currently, the Guadalinfo Living Lab network is composed of more than 800 centres throughout Andalusia located in all municipalities under 20.000 inhabitants and in deprived urban neighbourhoods of the big cities. All the centres have workstations, broadband access to the Internet and, the most important, a Local Innovation Agent that manages the centre and dynamizes people.

The following steps of actions and iterations have been designed to overcome the new digital gap: *Detecting the gap, Definition & awareness, Strategic definition, Living Labs as Smart Agents, Activities design – Stakeholder engagement.* Based on the definition, the proposed scalability, the fluent bottom-up-bottom iterative model, and quadruple helix concept, the resulting inclusive meta-laboratory spins around openness: Open Science, Open innovation and Open to the world.

3.6 Başakşehir Living Lab: The living lab model and contribution to the innovation ecosystem

Başakşehir Living Lab Istanbul aims at (1) providing the environment for promoting development of innovative ICT products and services, (2) establishing a modern, livable, efficient and environment-friendly living place, which is in line with its vision, and (3) being a good example for replication of similar Living Labs in other cities around Turkey.

Başakşehir focuses on the following four aspects:
1. Improving living standards
   - Efficient & Smart living spaces
   - Futuristic ICT infrastructure
   - Smart Mobility & Transportation
   - Setting the construction and infrastructure standards
2. Enabling value-creation
   - Innovation
   - Education
   - Development of the entrepreneur and innovation ecosystem
3. Development of value-adding public services
   - Maximizing use of technology for efficient operations
   - Improving the knowledge-level of people
   - Providing services that increase the well-being and satisfaction of people
4. Being a leading example of developing, applying and managing city concepts
   - Use of technology
   - Applying innovative ideas that enable a smarter life
   - Becoming an area for new technology development and implementation

Başakşehir Living Lab has designed a model for cities to create value for public, people and entrepreneurs in developing successful technologies. The essential elements are listed in the full case description (Annex 4). In addition, 9 case examples of value-creating products & services developed through Başakşehir living lab are described as well as two examples of the living lab's role in enabling value-creation.

3.7 imec.livinglabs

Until October 2016, iMinds was Flanders' digital research & entrepreneurship hub, driving innovation for society and economy, through strategic and applied research on digital technologies. Now, iMinds has merged with the world leading research institute imec, where the 'old' iMinds is one of the three business units of the new imec. Following the merger, iMinds Living Labs is now called imec.livinglabs. This division within imec is a leading organization in the European Network of Living Labs (ENoLL) and was also one of the founding members in 2006. Imec.livinglabs offers researchers and entrepreneurs the chance to test and co-develop their innovative digital solutions thoroughly with their target audience, drawing upon a state-of-the-art living lab toolbox that consists of scientifically validated R&D methods. Within all Living Lab activities users and stakeholders are involved early on and all through the innovation process. All projects are built on the following principles: multi-stakeholder involvement, multi-method, active user involvement and real-life experimentation.

This approach provides a solution to innovation thresholds and challenges such as:
• Transforming ideas into prototypes users can interact with in their daily context.
• Shaping '(minimum) viable products' through an iterative, agile process.
• Designing business models through stakeholder analysis and go-to-market definition

Within the different Living Lab activities, imec.livinglabs engages all stakeholders in a lean and structured innovation process which is built around validating and invalidating all assumptions regarding the digital innovations in development. This data-driven approach is implemented using an internally developed business innovation methodology, user research methods, prototyping approach

and panel management processes. Through our living lab projects, we continuously validate, improve and expand these methods and their supporting tools.

Imec.livinglabs' track record and experience are built on a decade of pioneering work in the Living Labs movement and has two general focus areas:

1. Bilateral, company-driven projects in which iterative user research steps provide insights on creating products and services which are optimally aligned with the intended users' needs. This way, new product introduction can be optimized by reducing risk and supporting company growth. On top of its local research projects, imec.livinglabs also offers this type of service delivery in European projects such as the EC FIWARE programme. Moreover, imec.livinglabs is also implementing this type of entrepreneurial living lab services in a public sector context.

2. Large scale, quadruple helix smart city pilots in which cities, enterprises, SMEs, entrepreneurs and end-users collaborate in projects with high economical and societal impact. In this context, imec.livinglabs is an experienced coordinator in multiple CIP programs. Today, imec.livinglabs is setting-up the 'City of Things'10 Living Lab constellation in Antwerp, where a large end user community is involved in generating data and co-creating products on state of-the-art IoT technology to provide all stakeholders insights on a new generation of digital services.

3.8 eLivingLab

The aim of e'LivingLab, the Living Lab created by espaitec -Science and Technology Park (STP) of Castellon (SPAIN)- is to provide diverse scenarios for the companies linked (physically or virtually) to the STP to design, develop and test their products in the most real environment: the University Campus together with R&D groups from the University, others companies that can create some sort of synergies among them, Local and Regional Governments and citizens.
Description.

The most important capability of the e'LivingLab is the fact that it is created by a Science and Technology Park to foster the hybridisation among all the LL participants not only the interaction between companies and clients, and that characteristic is the one that become special to the LL. The creation of an environment where different companies and R&D groups (from the University and from companies as well) are designing and developing products with the co-creation user support sparks the interaction among all of the to generate more extreme innovation in the point of time where new synergies are created.

The Science and Technology Park (STP) becomes a great place to grow so the most suitable arena to promote the innovation among the companies involved (physically and virtually) on the STP based on our octagonal ecosystem of innovation and the Living Lab is a great mechanism to do it. e'LivingLab's example is used in terms of a Convoy Project as the "glocal" growth accelerator of the Cluster Model by Porter.

4 Conclusions

*(Identifying **3-5 key actions/recommendations** that should guide the future policy and investment framework and outlining our paper's main assumptions. Depending on the approach we follow our conclusions could highlight concrete actions, ENoLL recommendations or just identification of key needs for future actions and funding)*

Enabled by Large Scale Pilot funds, H2020, regional and cohesion funds Living Labs can contribute to the 21st century's citizen science and boost, enhance the current social movements in cities. In ever-increasing turbulent world, the complexity of relationships in developing innovative services for public and private sector call for novel approaches. Living Labs aim to be the natural and trusted places to engage with citizens and users on a city or regional level and boost the citizen driven Social Innovation phenomenon. Transition from the linear to the non-linear innovation towards the multidisciplinary, multistakeholder, impact driven RDI based on (joint) value creation with, for and by the end-users/citizens

In contrast to the dominant management principles, which encourage people in organizations to obey orders and keep their place, the living lab/innovation intermediary perspective values participants to be creative, connected, and participatory. There is no single purpose for Living labs. Both practical experiences and research on living labs almost unanimously document living labs as real-life environments, contexts, in which a broad variety of stakeholders including the users join together to liberate innovation potential through co-creation, developing, validation and testing, with different stakeholders. Living labs could be considered as the key characteristics of any smart city and a testing ground for radical urban engineering as the citizen engagement is the trend happening already today in smart cities.

Transnational co-creation of innovation, collaborative experimentation, and scaling up protocols need further development in order to scale up any innovation especially digitally. The collaborative nature of Living labs provides a solid context for this activity. Ideas turn into innovations through participatory service design methods through living lab activities, and are validated and tested with multi-stakeholder environment. Pilots are launched in local arenas and often require localization to some degree. Innovative pilots can be scaled up through multi-smart-city framework with the help of Living lab network. This in turn enables integration between different urban systems and co-creation between citizens, cities, regions, countries, and continents.

Exploring the opportunity to co-create self-sustaining model through an open innovation driven, quadruple-helix style with service design approach to co-develop and support social innovations to overcome institutional barriers.
Living Labs are resolute to build and strengthen the European Open Innovation ecosystem that enables the pan-European experimentation environment, supporting the realization of the European Digital Single Market. Through the experiment of collecting the case studies (see Annex) and compiling this positioning paper, our conclusion is that further investment and collaborative experiment will be necessary at European and International level to realise this.

Annexes:

Annex 1: Bird Living Lab: Technological innovation and specialization in a smart territory

Bird Living Lab, situated in the Biosphere Reserve of Urdaibai (Basque Country), is the local, national and European hub in developing technology for nature monitoring with the aim of adopting effective public policies in environmental management and biodiversity, and in smart communities' specialization.

Bird LL's mission is to:

- Lead a network of exchange of goods and services in the field of ornithology and derivate tourism
- Co-create, test and validate ICT products for environmental management and derivate services and scale them up to new markets.
- Create a community of knowledge in nature monitoring, environmental management and smart communities.
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FOSTERING SMART SPECIALIZATION THROUGH BEST PRACTICES

Bird Living Lab is a best in class example of the potential entrepreneurial smart discoveries that can occur from a combination of a territory's assets and opportunities at local and international level.

Despite Urdaibai´s territory economic development possible limitations, its location had some great hidden opportunities for research activities. These activities developed by the Bird Living Lab and linked to the potentiality of the application of new technologies, gave European entities of Aquitaine and the Basque Region the chance to *discover the impact regarding entrepreneurial discovery possibilities*.

BIRD Living Lab combines technological development for the analysis of bird migrations through European-based emerging technologies in the field of geo positioning and the research and development of a bird monitoring platform for the exploitation of useful data in public science and technology, and academic field, asserting a key to the design of public policies on environment issues. In addition to research activities, Bird Living Lab contributes to generate returns in smart economy and social terms, by running related activities:

- Frontline research in the field of ecology, climate change and biodiversity.
- Training and education on the environment and biology (ornithology).
- Testing of technologies that are convergent with scientific, technological and economic uses and potentially commercialised.
- Generation of innovation projects based on technologies applicable in global value chains and EU networks such as POCTEFA, ENOLL, EURING, ARTEMIS etc.
- Tourism, of a selective nature and with high purchasing power, linked to researchers who stay at Urdaibai Bird Center.

FOSTERING ENTREPRENEURIAL DISCOVERY

The case of BIRD Living Lab has lead to a clear example of an entrepreneurial discovery that responds to the underlying idea of territorial smart specialisation with a clear benefit for the participating SMEs:

- It involves prioritisation around a specialisation pattern for the Urdaibai area, towards knowledge-intensive activities in attracting high level SMEs participation.
- It contributes to the diversification of a rural area towards new and very specialised activities that arise from hybridisation of the Center's technologies developed together with SMEs, and related activities.
- It involves a channel to global networks, giving Urdaibai a global dimension in economic, social and environmental terms in opening new markets for SMEs.

BIRD Living Lab IMPACT:

The added value and benefit for the SMEs and rest of partners with whom Bird LL collaborates comes from a threefold perspective:

- In *economic terms*, the living lab acts as a technical and research hub that allows the testing of latest generation of ICT solutions developed by the partners. These solutions, applied to monitoring Regional unique biodiversity, create externalities in fields like logistics, security, aerospace, etc in other regions.
- In *social terms*, the Living Lab contributes to the creation of a node capable of attracting international talent from other areas, which in turns contributes to connecting the territory in an open perspective. For this reason, the Living Lab provides the creation of new activities based on tourism, education and environmental education and training.
- Lastly, in *environmental terms*, the living lab is contributing to ensure the maintenance of the natural character, the landscape, the ecology and biodiversity of Urdaibai Reserve, offering the possibility to be replicated at internationally in other areas.

Bird Living Lab has provided a new way of open innovation development, re-thinking about the technology developed, giving new uses and expending their potential market to new sectors and countries, generating new business opportunities. In fact:

- The technological innovations have been scaled up to other markets:
  - o Africa (Tunisia, Senegal)
  - o East of Europe (Hungary)
  - o North of Europe
- Bird LL has provided support on the creation of a European Network of Bird Centers for knowledge transfer, promotion, specialized tourism, education, etc.

Bird Living Lab has contributed also to turn Urdaibai Bird Center's and its surroundings' constraints into strengths, by also giving the area of Urdaibai an international turn and make it a major center for international research. This has finally led to linking its frontline research in the fields of ecology, climate change and biodiversity to training and education, the development of hybrid technologies and innovation initiatives, and scientific tourism.

REFERENCES to BIRD Living Lab case:

Publications:

- "Urdaibai Bird Center Smart Territory" (Monna project. Poctefa)
- "Smart Specialization in the Basque Country: A case of entrepreneurial discovery" (Gaia and Infyde)

Annex 2: Botnia Living Lab: Open Research and Innovation

Botnia Living Lab focuses on human-centric research, and the development and innovation of new ICT-based services. Botnia started in 2000 and has matured from a test-bed to a real-life laboratory.

Botnia is a world-leading environment for user-centric research, development and innovation (RDI), instrumented by methods, tools and experts, for interaction with user groups. Botnia Living Lab is constantly being developed further in close cooperation with end-users and stakeholders as well as researchers at Luleå University of Technology. Our 6000 listed end-users are found across Sweden and they are engaged in various ways in the total process from need-finding and idea-generation, through concept-development and prototype/usability testing to service piloting. Since the start of our user panel this has been one of our most important boosters in the creation of novel and valuable IT-services and products as well as for research. These creative volunteers have been involved in a significant number of different research and innovation activities with researchers and companies from Sweden and abroad and in several different application areas related to Smart Cities, e.g. Energy Efficiency, Privacy & Security, eBusiness etc.

To support the process we have developed a Living Lab methodology named FormIT, adopted by many Living Labs around Europe and exploited by industry. This methodology supports user involvement when developing digital innovations. It´s also a methodology for user empowerment, to capitalize on the power of the crowd. This is an iterative and interactive innovation-process methodology with user-engagement in all phases of the innovation process – from need finding to beta-trial and pre-market launch.

Different methods and tools are used for professional support for user-involvement. The methodology assists in Living Lab operations with users and other stakeholders as well as to assess the impact of the approach.

Botnia works in a Quadruple Helix partnership with users, researchers, IT industry, SMEs and municipalities to bring added value to all stakeholders.
Botnia Living Lab at Luleå University of Technology is a unique and open environment for human centric research, design and innovation of new ICT-based products and services.

Engaging People - Humans as actors or factors
Having a strong focus on the data, there is a growing risk that humans will be viewed mainly as data providers and data generators and not as human actors with their own dreams, needs and values that digital smart city solutions should answer to.
Big data have become part and parcel of our times. Today, we can't imagine a world without Google searches, online weather forecasts or GPS technologies hence data has a huge impact in our lives and it often makes our lives easier. The use of technology and the subsequent generation and utilization of digital data have become ubiquitous, virtually taken for granted. The impact of these technologies is evolving continuously with the creation of new content, connectivity, analysis software and infrastructure. Adding to this, we can observe a radical trend towards networked behaviour such as crowdsourcing and co-creation, driven by (among others) the emergence of the open-source software community, the general use of social networks and increased availability of data. The potential opportunities to engage people in innovation process have never been easier as a plethora of digital resources can be used as facilitators of the process.
However, there is a growing trend to view data as the new oil or as gold mines consisting of wealth if we only understand how to harvest the data in the right way. In smart cities, big data are generated by e.g. sensors, social media flows, open government data, citizen data and GPS trackers. But with a

strong focus on the generation, collection and analysis of data, there is a growing risk that we humans will be viewed mainly as data providers and data generators. This can lead to a situation where people's privacy, their needs and values comes second after the expected value data can offer for companies and cities. **In Living Labs the endeavour is to co-create digital innovations with people and their needs at the centre (Humans as actors). Hence, Botnia Living Lab have developed a methodology that engage humans as actors in open innovation processes (FormIT)**

The FormIT Methodology

The methodology applied in Botnia Living Lab innovation processes is called FormIT and has been developed to fit into the Botnia Living Lab approach.
FormIT is a human-centred approach to develop IT-based smart city solutions with an iterative and interactive process with strong stakeholder engagement. It aims to facilitate development of innovative smart city solutions that are based on a holistic understanding of people's needs and values, paying due considerations to issues of equality, autonomy and control in relation to actual use situations. FormIT is grounded in the theoretical streams of soft systems thinking (Checkland, 1991; Checkland & Scholes, 1990), appreciative inquiry (Cooperrider & Avital 2004, Norum, 2001) and needfinding (Patnaik & Becker, 1999). The process consists of **three cycles**; *Concept Design, Prototype Design and Innovation Design.* Each of these cycles has **four phases**, *Explore, Create, Implement and Evaluate*. In these phases the aim is to focus on identifying and working with the strengths in a particular situation and to build on that to ensure that future smart city solutions will create value.
Hence, the core of FormIT is to focus on the opportunities that a specific situation holds and to build on the strengths in a situation to ensure that the future smart city solution will create value and not only solve a problem. FormIT is also centred on understanding people's needs and values and to use these as basis for the development of the innovation. Hence, a specific target is to gain deep insights into people's thoughts, dreams, values and wishes and to co-create solutions with the stakeholders. In addition, FormIT actions are implemented in real world contexts which mean that people's real experiences from interacting or being exposed to a smart city solution guide the creation of the smart city innovation. The **Basic Shape** of FormIT reflects the different phases carried out in all FormIT cycles independent of particular focus.
Explore: In this phase needs, dreams and ideas are explored taking the strengths in a particular situation as starting point for new opportunities.
Create: In this phase concepts, prototypes and innovations are co-created, designed and developed.
Implement: In this phase concepts, prototypes and innovations are implemented and tested in real-world contexts
Evaluate: in this phase concepts, prototypes and innovations are evaluated with a formative approach, looking for ways to improve

Innovation in Botnia Living Lab following the FormIT Methodology have proved to be a powerful instrument to:
• speed up the innovation process from idea to market launch
• to co-create and improve innovative ideas
• to investigate and create new business opportunities

Example Case - User Empowerment for Enhanced Online Presence Management Project (USEMP)

User Empowerment for Enhanced Online Presence Management Project (USEMP) is a funded by EU FP7 with the mission to raise citizens´ awareness of their digital footprint in social media and give the

users' the control of their personal data. Two living labs collaborate in end-user engagement in this project.
We will use this project to illustrate how we work and what our approach contributes to.

Today, there is a tendency in cities to use different sources and types of data that are available to develop services that support companies, public organisations and citizens in their everyday businesses. With this approach, and with all the different sources of data coming from sensors, mobile phones, social media flow or other digital mesh, there is a great risk that people's privacy is threatened, which in the long run will decrease people's level of trust in the city as well as their willingness to use these services. People in general are still rather naive when it comes to on-line privacy and the level of awareness and understanding is rather low. To increase the level of understanding and awareness, Botnia Living Lab has participated in a project called USEMP which focus on developing tools that can support individuals to increase their awareness of how the data they share in social media can be interpreted, used and exposed by third parties.

In USEMP Botnia Living Lab support the development of DataBait. Researchers in Greece, France and UK have been developing a prototype for User assistance tools – that provide the users with appropriate means to be easily informed of their privacy status, to acknowledge the potential value of the information they share on social networks and to remove/change the visibility of data at their convenience.

Throughout the whole development process end-users have been involved in co-creation of the tool following the FormIT methodologies three cycles. Hence, Botnia Living Lab has supported the process by capturing user experiences and responses to the DataBait tool using FormIT. Throughout the project we have moved through Explore, Design, Implement and Evaluate in at least four rounds (one round in first cycle, two in second cycle and one in third cycle), each round providing important input to improve the tools.

Furthermore, the Living Lab supported process included all five Key-principles of Living Labs:

Value - new insights achieved for researchers, users as well as for users

Influence - The users were influencing the trial set-up to fulfil values for them, their insights were influencing further improvements of the DataBait tool.

Sustainability - The DataBait tool is created to be used in reality and a business plan is being developed to enable its life after project

Openness - results from the evaluations have been communicated and is available to the public

Realism - all testing has been in real world situations with users testing DataBait on their own Facebook profiles.

From the experimental approach to include users in the development and evaluation of DataBait we learned that users attitudes towards institutional privacy and disclosure changed more when they experienced the intrusiveness of the possible secondary information use on their own data, if compared to the setting in which the potential of the DataBait tool was only discussed in a general level. Our participants mainly felt that they disclose only the same information that they share directly and actively. Through observing some of the inferences that could be analysed directly from a user profile altogether, the participants were able to see the connection between value of their information disclosed and its implications over their privacy. Hence from participating in USEMP and testing the DataBait tool on their own Facebook profiles the awareness of privacy issues increased and user behaviour changed as awareness increased.

Botnia Living Lab

For the process of stakeholder involvement Botnia Living Lab has developed the FormIT methodology, an iterative and interactive process in several steps for stakeholder involvement in all phases of the innovation process of an IT-based service/product - from need-finding to beta-trial and pre-market

launch. For the stakeholder involvement, it is very important to recruit the right stakeholders in accordance with the purpose of the innovation. With Botnia's support the right stakeholders can be mobilized for the purpose. When running an innovation process with stakeholders involved, different motivators are triggered to get different stakeholders on board and to stimulate their actions together with easy communication and clear descriptions on what they should do, when and how.

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Annex 3: Laurea Living Lab - DigiSmart Project

The DigiSmart Project promotes the **Active Citizenship** in the Helsinki- Uusimaa Region as cooperation project with three Universities of Applied Sciences. The project **gathers** local networks and partnerships with the public and private actors to promote the Active Citizenship, **generates** new project ideas and proposals for Helsinki-Uusimaa region and internationally and **enhances** modern learning in networks and added value creation. RIS3 strategy for the Helsinki-Uusimaa Region priority Active Citizen emphasizes e.g. user oriented service systems, co-development and open service models. DigiSmart Project is coordinating this priority at the region between years 2016-2018.

Digital revolution will change the fundamental constructions of society. DigiSmart project examine this change on the one hand from the perspective of vulnerable groups and the other hand from the perspective of changes in education. "Well-functioning everyday life and active citizenship for all" is the goal of the Uusimaa region – the project give voice to vulnerable groups to ensure that the development of digital services promotes the welfare of all citizens. The crucial question is, how to organize citizen-driven service design to meet the needs of all citizens. The citizens are not seen only as consumers of the service, but active co-creator and producers of welfare services. The DigiSmart project activate local young people, elderly and immigrants to work as active community members. Not only the local communities but also the virtual communities can have crucial role to promote welfare.

Helsinki-Uusimaa Region as a regional LivingLab
The Helsinki-Uusimaa Region is home to around 1.6 million inhabitants, which is more than a quarter of the Finland's total population. The region is one of the fastest growing areas in Europe. There are good possibilities for research institutions, companies, public agencies, third sector and citizens collaborate for investigating and creating new products and services at the local level. The Universities of Applied Sciences have an important role as an intermediary at the regional, national and international levels by developing networks and culture of innovation, and sharing platforms.

35 000 students and 2 200 staff members of the **three Universities of Applied Sciences** are the great potential for research, new innovations and regional development. The role of learning institutions is to enable open learning environments, in both digital and physical learning spaces, not only for students but also for the local communities. For students, this means really-life connected learning environments, where they are not only the learners but also co-operators and innovators.

Some Examples from Project Activities in 2016
- One main purpose of the project was to **give voice to vulnerable groups**, elderly, young people and immigrants, how the digitalization will affect their everyday life. Autumn 2016 were implemented a research where over 100 students interviewed totally 331 people. The survey explored, what kind of digital services and information do people currently use, what they would like to have and what kind of challenges do they face using digital services. A large number of students allowed the rapid implementation of the survey. On the other hand, the interview was not only the collection of information, but at the same time the people were encouraged be active in development work, like participate open workshops.

- **Open workshops** are organized to activate different actors from public, private and third sector to work together. The workshops are held in local communities, in different physical locations in order to reach people with different backgrounds. UAS's and the students have active role in workshops as organizers but also as a link to the academic world. For example,

common work shop with Laurea students and Association "Vantaa Invalids" were brainstormed digital services to disabled people in Vantaa. As a result of the workshop there will be started a "Mobile Digi-info" organized by the third sector.

- There is a need to develop a **multi-channel and new forms of communication for health and welfare promotion**. People of different ages and different backgrounds are reached through different virtual channels. To respond this need Metropolia's nurse and media students together with the working life made concepts for new digital health services and information campaigns by using new digital channels; for example using meme´s for "Stop taking snuff "- awareness campaign and "No Social Media Day" – campaign which encourages people face to face conversation – the campaign includes the video:

https://www.facebook.com/events/567870570076702/permalink/567878376742588/

DigiSmart Project is implemented in cooperation with
Laurea University of Applied Sciences www.laurea.fi/en
Metropolia University of Applied Sciences http://www.metropolia.fi/en/
Haaga-Helia University of Applied Sciences http://www.haagahelia.fi/en/
Helsinki-Uusimaa Regional Council http://www.uudenmaanliitto.fi/en
www.digistifiksu.fi

Annex 4: Library Living Lab - Science and technological innovation in the public space

The Library Living Lab (L3, librarylivinglab.com) is an open, participatory experimentation space located at the public library "Miquel Batllori" in Sant Cugat del Vallès (Barcelona, Spain) with the aim of exploring how technology transforms the experience of people with culture. Here, research is conducted responding to the four clusters of Responsible Research and Innovation (RRI) process, namely: Diversity and inclusion, Openness and transparency, Anticipation and reflection, and Responsiveness and adaptive change.

L3 implements citizen science at a local scale, and uses the means of all the participant stakeholders, and the network of libraries and living labs, as amplification channels for the research and innovation outcomes obtained. This approach allows fostering open science by embedding it in society in a natural way, and by removing currently existing barriers.

FOSTERING OPEN SCIENCE THROUGH BEST PRACTICES
L3 can thus be viewed as a best practice implementing the quadruple helix model. The research program was initiated in 2011 between the Computer Vision Centre and the Association of Neighbours of Volpelleres, aggregating in 2012 the Municipality of Sant Cugat, the Regional Government of Barcelona and the Universitat Autònoma de Barcelona.

The Library Living Lab appears here as an entry point to the social fabric, and it represents an opportunity for scientists to take profit of an already established infrastructure of public spaces (library), amplifying network (network of libraries and living labs), and direct access to public (the "new" library users). In addition, it appears as a relevant arena to identify and tackle the specific challenges associated to collaborative creation, social innovation dynamics, and translation to society of results, from a very practical perspective in which those challenges can be visualized in the day-by-day activity.

Activities comply with voluntary codes of conduct such as *The EU Code of Conduct for Research Integrity* and *The Citizen Science Decalogue*. The whole idea capture-and-development process is managed in every stage by implementing feedback strategies in which actors are invited to contribute in an informed, reflective and responsible way.

One possible criticism to this approach is that it scale is apparently small (citizen science is expected to move large quantities of people at a city, region or country level). But it is exactly its size what makes it scalable and scalability (and its further sustainability) is becoming a key issue in citizen-centred projects. The scientific processes occurring at neighbourhood scale can be replicated to different neighbourhoods in a coordinated way, and it is here where the living lab infrastructures can play an interesting role for citizen science.

EMBEDING OPEN SCIENCE IN SOCIETY
The Library Living Lab activities are structured in order to make science more responsive to wider societal needs and get citizens and end users more engaged in the scientific processes leading to innovation.

Science more responsive to wider societal needs
L3 places a special emphasis in the active participation of the citizens early on the innovation process, under two basic premises: 1) By placing research activity in a context of social challenges that are easily identifiable by people. 2) By understanding that the citizen-centric innovation is a key element for ensuring real-life impact and scalability of outcomes.

The decision making about the prioritized lines of action, that correspond to different social challenges, is carried out by consensus by a panel with representatives of all the stakeholders and these lines are periodically updated[1]. Activities aligned with the prioritised lines, and linked to actual research projects, are decided by an executive group. For each action a measurable return is stated (a scientific contribution, novel prototype, novel service, open software, workshop, etc.). A number of small companies participate at a project level associated to the specific activities.

The explicit statement of Challenge-Action-Return provides a framework that embeds the research action in a responsive context of societal needs and opportunities. It also provides the citizens with reference links for the research actions, and it integrates the scientific process as part of the ordinary life in ordinary public spaces.

Inclusion of citizens
The Library Living Lab thus gathers citizens around activities independently of their personal background, age or gender. The living lab plays here an inclusive role, by potentially integrating all the population willing to participate in specific projects with real scientists and technologists altogether aligned with targeted actual social challenges with an explicit outcome.

Fostering of Scientific vocations
Beyond classical science dissemination, which must always be present as a part of the scientific work load, the Library Living Lab is providing here an arena for the developing of scientific vocations "by contact" with science experts. And this is done within projects in which science is naturally embedded in a targeted social challenge that is now easily identifiable and explainable. This can be particularly relevant for female vocations in STEAM, in which evidence in the low rate of girls studying in areas such as Computer Science (<5% in Spain) shows the lack of perception about social impact of technology.

Alignment-awareness
This explicit alignment of challenges with scientific outcomes is in practice very seldom presented to society, but it is particularly necessary for citizens (tax payers) to increase their awareness about the need and relevance of funding research actions and the impact they can produce at midterm.

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[1] By the end 2015 the prioritised lines of work consisted of: Re-valorising digital collections, Linking physical and digital objects, Novel narratives of Story Telling, Methodologies for Educational Apps, Collaborative creation, and Fusing GLAM (Galleries, Libraries, Archives and Museums).

REMOVING BARRIERS FOR OPEN SCIENCE

The Library Living Lab implements a scenario for the development of the scientific process as a framework, beyond particular projects, and emerges as a powerful model for project-based learning.

A lab about the lab

The presence of all the stakeholders in the Library Living Lab makes it appear, de facto, as a meta-lab from different perspectives, which arise from the activities taking place:

- Empirical exploration, which is the basis of the scientific method, accompanied by methodological tools such as design thinking, or action research, allows for the definition of novel prototypes, the redefinition of uses for tools and the design of novel services.
- The dynamics of collaborative creation are studied under the scope of an open innovation framework by questioning the function of the public space in society and inquiring about the role of responsible citizens in its transformation.
- Credit and ownership of data contributions, which is not appropriately solved yet from a legal point of view, are an essential element in the day by day activity.
- The integration of results (the return of the actions) also face the challenge of a public space that can potentially generate open data that must be appropriately stored, curated and translated to the community in a quick and efficient way, and/or with a suitable exploitation framework.
- Finally, the dynamics generated between the stakeholders, and the demand of an efficient translation of the innovation results, creates the need of specific transformations at the administration level that are not coming from a top-down approach, but from the arising needs in the living lab.

Non-regulated sharing and learning spaces.

Sharing and contributing to the common knowledge between all the stakeholders also transforms the living lab into a non-regulated learning space, where knowledge is interchanged by users in an open model.

Technology transfer through fast prototyping

In oriented and applied research, it essential to test the potential implementation of the research results into prototypes. In this sense, the Library Living Lab structure allows for a fast prototyping scheme. Here, users are explicitly aware of the pre-market phase of the tested product, which allows for a control of the expectations and addresses a clear message about the life-cycle of knowledge from inception, research, application to a prototype and validation of product.

An ecological laboratory for research

Finally, scientists can benefit from a real laboratory placed outside the university walls. The library is a friendly space and a natural meeting point for people. This provides a relaxed arena that can help bringing down prejudices about science as something happening in cold labs. Scientific activities carried out in this "ecological" scenario, now enriched with the participation of people from different backgrounds and professional interests, facilitate the incorporation of participants who would not have had the chance to access the scientific experience otherwise.

SOME ILLUSTRATIVE EXAMPLES

Below, we present five selected examples of actions taking place in the Library Living Lab during the first year of life, and in different areas of knowledge. They include both activities in with the experimentation process was linked to autonomous groups of users without a previous scientific background, and also activities explicitly linked to funded research projects. Some relevant outcomes obtained are also mentioned:

- The periodical activity "Educational Apps" defined pedagogical methodologies and an assessment grid for apps in schools with the help of teachers from 5 schools in Sant Cugat[2], illustrating the role of the living lab as space for non-structured professional learning.
- The periodical activity "Collaborative Creation in 3D" developed autonomous dynamics of users for collaborative creation[3]. A group of autonomous users evolved from learning how to use a 3D printer, to create a remote controlled Formula 1 car, to a remote controlled flying drone, and, finally, a remote controlled vessel. The group was gradually increasing the number and type of experts from 3D printing, to remote control, to drone driving and 3D design. Sharing each one's expertise contributed to an increasing complexity of the projects and the positioning of a creative community as a referent among the neighbourhood.
- The Library Living Lab is the itself object of study of the Dept. Psychology UAB for the identification of collaborative creation dynamics in innovation spaces, including the evolving perception of science and technology as an enabling factor among the living lab users[4]. This research belongs to the area of social sciences and implements the function of the lab as a meta-lab.
- "Teaching good taste to computers" analysed a dataset of images and acquired data from the library users to train an algorithm to rank an image based on aesthetical judgment. The process is scaled up at an internet level after the prototype phase[5]. This project generated not only the database but an open debate about the ethical limits of associating human features such as aesthetic judgment to machines.
- "Visual interaction" developed the testing of a human-computer interaction interface based on eye-movement, in order to understand how the algorithms respond to different behaviours[6]. The outcome was a prototype implementing the algorithms of eye-tracking in a universal low-cost device.

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[2] http://librarylivinglab.cvc.uab.cat/calendar/workshop-on-educational-apps/?lang=en
[3] http://librarylivinglab.cvc.uab.cat/home/que-hacemos/collaborative-creation-in-3d/?lang=en
[4] http://uab.academia.edu/MiquelDomenech
[5] Funded by TIN2013- 41751-P and TIN2013-49982_EXP. http://librarylivinglab.cvc.uab.cat/calendar/teaching-good-taste-to-computers/?lang=en
[6] Funded by Google Academy Award 2014. http://librarylivinglab.cvc.uab.cat/calendar/visual-interaction/?lang=en

Annex 5: Guadalinfo SMARTLAB: Inclusive and open model for Smart scientist strategies

BACKGROUND

It could be easy to reflect and expose that this project or this Lab approach appears as a result of expertise thinking of engineers, politicians or ICT gurus belonging our company but, fortunately, it is not the case. It emerged as an opportunity through listening to the territory.

In fact, two main conceptions made this opportunity appear. On one hand, the current development of policies and activities related to smart cities technology is reaching a high degree of maturity. Both in Europe and in the world there are many cities that, in one way or another implemented such solutions in areas of interest.

On the other hand, this development in the cities is not accompanied by a similar development in rural areas. This is the case of Andalusia, a region in the south of Spain, the largest in terms of population and percentage of population in rural areas, which has stabilized over recent years. How did we notice? What evidence or input? Easy, only by hearing people actively through our main value: Guadalinfo[7] Living Lab network. It means, being active in detecting needs and in including a human perspective in the global technological and scientific tendencies. Opening exclusion and elitism.

So, we are exposing two facts: high tech and economic development among Smart Cities tendencies, and completely absence of knowledge and information in rural areas. I.e Smart GAP.

Why then an opportunity? Is it not a problem? Yes, this gap emerges as an opportunity for Guadalinfo, and for Living Labs indeed, because of its capillarity and because it can influence, through direct link, in regional policy makers. Let us introduce a few Guadalinfo features for better understanding the study case.

Currently, the Guadalinfo Living Lab network is composed of more than 800 centres throughout Andalusia located in all municipalities under 20.000 inhabitants and in deprived urban neighbourhoods of the big cities. All the centres have workstations, broadband access to the Internet and, the most important, a Local Innovation Agent that manages the centre and dynamizes people.

Guadalinfo is a project managed by Fernando de los Rios Consortium, composed by the Regional Government and the 8 Provincial Councils, and in charge of deployment of ICT related policies all over Andalusia.

Taking into account this double consideration, both Living Labs capillarity and political vehicle, Guadalinfo emerges as the perfect instrument to fill the GAP by linking high tech Smart cities productions and rural and citizen's needs.

To end with the case study background, it seems clear the rural gap, but stressing out we also refer a "Citizens-Smart Tech" Gap. And this conception also perceived from the territory was inspired by Boyd Cohen[8]. E.g. we can think in the most technological advanced building: compact fluorescent lights, solar panels, automatic doors and lighting, etc. all monitored by a huge number of sensors; but is it taken into account the human perspective? Did the promoters care about bus stops near the building avoiding citizens to use private cars? What kinds of materials were used in the construction? We are considering Science but Citizen Science.

At this point, once introduced the concerning gaps, lets introduce the description and current status of the proposed case of study, its alignment with RRI and 3Os strategies and, finally, its mid and long-term expected evolution.

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[7] https://www.youtube.com/watch?v=iP5CvTOM2Cw&index=3&list=PLx3cIKZ1FlaAPfHi4XoVLnv2Qm2nq-tYp
www.guadalinfo.es

[8] 6 key components for #SmartCities http://www.i-ambiente.es/?q=blogs/boydcohen-6-componentes-clave-para-smartcities

DESCRIPTION

Below we are describing the study case concreting the significant steps of actions and iterations executed and designed to overcome the new digital gap:

1. *Detecting the gap*. In our citizen innovation lab conception, living lab indeed, the user/citizen is in the centre of the action. It confers a privileged position in detecting both user needs and exclusive tendencies to them. Support and boost this bottom-up permeability is a must.

2. *Definition & awareness.* Researching on the current knowledge and information on Smart Cities we realized that the concept was unknown in rural areas, but also that most of current smart strategies were excluding rural areas. This way, it was designed and executed a dynamic activity where stakeholders (citizens, promoters, innovation agents,...) were motivated to construct the "Smart Rural Concept". At first, the action was held in a limited number of living labs among significant rural nodes, aiming to obtain enough data to trace realistic and contextualized strategies within the whole Guadalinfo network. Materials available: teaching guide, stickers for the dynamic, canvas model, video of the experience[9].

3. *Strategic definition*. As a bottom-up process, data collected in step 2 resulted in the definition of specific strategic action lines to be included in global Guadalinfo Strategic Plan. One line action was defined, proposed and approved by Consortium council members:

   Developing AndalucíaSmart: Smart Cities-Regions

   Under this Line of Action it is included all actions aimed at consider that the citizen is the center of every process, politics or technology relative to Smart Cities. Everything starts in the citizens (their needs), in equality conditions, they participate in the execution and everything ends in the citizens (as beneficiary).

   The main cities of Andalusia have strategic plans and actions intended to develop these politics, services and technologies. We cannot ignore the rural zones.

   This Line of Action groups three actions (detailed description is available if interested): Training in Smart Cities, empowering citizens and open smart lab

At this point the strategic endorsement is a reality and next actions can be seen as an iterative design:

Let's focus on the core of the iteration: "Living Labs. Smart Agent Network". By setting up a Smart Agent Network to execute concreted (and on permanent revision) strategies, we are adding a "Responsible" meaning to the "Research & Innovation" (RRI). The four clusters in RRI are considered within the overall process:

- Diversity and inclusion
- Openness and transparency
- Anticipation and reflection
- Responsiveness and adaptive change

ALIGNMENT AND EVOLUTION

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[9] https://www.youtube.com/watch?v=vHT29gV9_cE

This actuation is being designed aiming the quadruple helix model, base of the new Living Labs innovation model:

In the iteration process defined above, it can be easily extracted that bigger efforts were executed on the Government and Citizens helix. Once the commitment in these two helixes is mature and reinforced, efforts in balancing the four-helix model are required. That's the reason why currently we are designing the incorporation of the University of Granada in the case, tracing synergies and complementarities among their spinoff-Fab Lab vision and the previously defined Living Lab network/system. Main objective is to merge in one model and conception.

Based on the previous definition, the proposed scalability, the fluent bottom-up-bottom iterative model, and quadruple helix conception, the resulting inclusive meta-laboratory will spin around openness:
- Open Science
- Open innovation
- Open to the world

BAŞAKŞEHİR LIVING LAB MODEL AND CONTRIBUTION TO THE INNOVATION ECO-SYSTEM
FOCUS OF THE CITY BAŞAKŞEHİR
a) IMPROVING LIVING STANDARDS
- Efficient & Smart Living Spaces
- Futuristic ICT Infrasturucture
- Smart Mobility & Transportation
- Setting the Construction and Infrastructure Standards

b) VALUE CREATION ENABLING
- Innovation
- Education
- Development of the entrepreneur and innovation eco-system

c) DEVELOPMENT OF VALUE ADDING PUBLIC SERVICES
- Maximising use of Technology for Efficient Operations
- Improving Knowledge Level of Public
- Providing Services that increase the well-being and satisfaction of public

d) BEING A LEADING EXAMPLE OF DEVELOPING, APPLYING AND MANAGING CITY CONCEPTS
- Use of Technology
- Applying Innovative Ideas that enables a Smarter Life
- Becoming an area for new technology Development and implementation

MODEL FOR CITIES TO CREATE VALUE FOR PUBLIC, PEOPLE AND ENTERPRENUERS IN DEVELOPING
SUCCESSFULL TECHNOLOGIES
- Provide the environment for research
- Provide the trainings to trigger the innovation spirit in people starting from the age of 10.
- Partner with universities for research and training needs
- Provide space and tools for product development & prototyping for Entrepreneurs and Startups
- Provide real test environments with real users for products @ Beta stage. Open to everybody.
- Provide User Experience environment for citizens to test use new technologies
- Make Municipalities / Cities the sponsors for these technologies that add value to public life quality
- Expand the use of technology by upgrading the standards in Building, Construction or Public
- Services Specification documents for giving permissions, licences and approvals.
- Expanding the use of technology in all other parts of the city
- Adapting the technology in other cities that are interested in the technology.
- Organization & Facilitation of Innovation Competitions at different educational levels.
- Promoting startups into other acceleration programs for funding to expand sales of new
- technologies into other markets. Growing the eco-system

EXAMPLES OF VALUE CREATING PRODUCTS & SERVICES DEVELOPED THROUGH BAŞAKŞEHİR LIVING-LAB

1. Smart rubbish collection platform
The aim of the project was to have a cleaner environment and to make cost savings in the rubbish collection process.

The system design was made by a group consisting of Municipality, Living-Lab, a Telecom Company and a Software company. The system mainly consists of Sensors, GPS System, Tablet and a Call Centre. The rubbish collection bins that have sensors detecting fullness of bins are put underground. When bins are full the sensor sends a signal to the Rubbish Collection Department as well as the nearest truck in the region. The truck driver gets the location of the bin from the GPS location system. The truck collects the rubbish using automatic arms that are guided by positioning sensors.

The initial test of the system was made with the rubbish system in front of Başakşehir Living-Lab. The results where successful and has been implemented in 500 locations within the Municipality. The municipality has made this rubbish collection system mandatory for all housing estates and has put the specs into the construction tender specifications

The results of the system have been enabling a cleaner environment and has brought significant cost savings, since in the traditional system there were 2 additional personal moving bins while in this system the truck driver manages the operations without leaving the truck. Also the rubbish collection time has reduced by 50%.

To see how the system works see the video in https://www.youtube.com/watch?v=--KBNwFf-BE

2. Use of high speed data @ houses

With establishment of Başakşehir Living-lab one of the first testings and implementation of the municipality has been to ensure smart city and citizen products and services could be used in households and public facilities. In order to test this a smart home was built in the Living-Lab with various smart applications, especially related to security, energy saving and smart shopping and this was tested. After successful results in a district of the municipality 30kms of fiber to home infrastructure was done and tested. With the real life success the municipality has made it mandatory for housing construction sites/ companies to build a fiber to the door infrastructure in every new estate development.

3. Smart home infrastructure development

As mentioned in item 2 with the standardization of Fiber to home infrastructure is also was made mandatory for construction companies to build in smart security and energy saving automated systems in houses and so far, 2 housing complexes have been built based on these standards

4. Mobile health measuring kits for public well-being

Mobile Health Check and tracking system was initiated by an entrepreneur group that developed their product in Basaksehir Living Lab. The initial product was capable of measuring 18 health parameters and sending the results to the people's mobile devices in 5 minutes as well as keeping a record of the health check results on the server for people to be able to keep track of their measurements over years. The initial product was first tested by the municipality management and approved with some improvements. Following development of Beta products, the Living-Lab agreed with the management of an housing estate of 5.000 people for real. The product was tested for 3 weeks over more than 400 people and following some minor corrections the product became a commercially sellable item. The first customer of the product was the Municipality to use these health stations across the city to improve awareness in people's health conditions. Please view the video for seeing the use: https://www.youtube.com/watch?v=sj2lYj8BTNg

5. Collection GSM Base stations into a single base station

The municipality decided and tested combining Radio Base Stations of different operators into one Base Station in order to reduce radio wave pollution and general environment pollution. After testing the first common base station it was made mandatory to all Telecom companies to build common base station in the premises of city.

6. Housing Residential management software

An housing estate management system called "Apsiyon", developed by a Startup Company was tested in one of the housing estates in Başakşehir. Following a trial period by the management and residents the platform was approved by the housing estate and know the platform has become a success story that is sold nationwide. http://www.apsiyon.com/

7. Waste Water Recycling System

The aim of this biological waste water treatment piping system was to use the treated water in irrigation of gardens and parks. The system was initially tested in Başakşehir Living-Lab with success. Know it has become commercially successful product that is been marketed in local market and international markets. Video: https://www.youtube.com/watch?v=bwQ2-A9KK3o Web: http://biopipe.co/

8. Mobile Application for enabling Sight disabled people to walk in Shopping Centres

A start-up company named Boni developed an application and a platform with sensors that enabled sight disabled people to walk around shopping malls and takes them to the shop they wish to find. The platform has been tested in Basaksehir Living-Lab with sight disabled people we brought to our Living-lab. The product has been upgraded based on feedbacks and has become a commercial product. Başakşehir Living-lab is also using the system by paying a monthly rental fee.

9. Baby Cry and Door Bell Sound recognition and notification kit for deaf parents and deaf people

The system has been developed by an entrepreneur incubated in Başakşehir Living-Lab. The aim of the Kit is to alarm deaf parents to hear their baby crying in another part of the house as well help them to hear the door bell ringing. The system basically detects the voice type using sensors and a software and send a vibration to a wrist watch of the parents / deaf person in the house. There is a different vibration for Baby Cry and Door Bell ringing. The system has been tested with deaf people and is assembled in the smart home are of Başakşehir Living-Lab. After few weeks trials the product will be turned into a commercially sellable product.

Video (Turkish): https://www.youtube.com/watch?v=q7pApmTAOPs

EXAMPLES TO VALUE CREATION ENABLING ROLE

10. Innovation Competitions

Başakşehir Living-Lab has been organizing nationwide Innovation Competitions in Secondary School, High School and University student's categories since 2014. This year in our 3rd competition we have added Teachers category to our competition. In 3 years, we have evaluated around 500 projects and given prizes to the best 3 in each category in fairs organized by Turkish Export Assembly and in Conferences organized by Başakşehir Municipality, in order to motivate citizens to become motivated for innovation.

11. Trainings and Workshops

Since 2014 Başakşehir Living-Lab has been giving free of charge ICT and Design related trainings to public meeting minimum entry criteria as well as providing Business related trainings to our Entrepreneurship and Startup ecosystem. So far, we have provided trainings to more than 4.000 people in around 100 different topics. These trainings have been an enabler for expanding the entrepreneur eco-system, the testing eco-system and the general startup ecosystem.

MEDIA AWARENESS

We also are trying get our Living-Lab more known on the market through communication over

media. Lately we had our startups explain their products on a TV Channel.
Video: https://www.youtube.com/watch?v=Jkx4sHcJSro

Until October 2016, iMinds was Flanders' digital research & entrepreneurship hub, driving innovation for society and economy, through strategic and applied research on digital technologies. Now, iMinds has merged with the world leading research institute imec, where the 'old' iMinds is one of the three business units of the new imec. Following the merger, iMinds Living Labs is now called imec.livinglabs. This division within imec is a leading organization in the European Network of Living Labs (ENoLL) and was also one of the founding members in 2006. Imec.livinglabs offers researchers and entrepreneurs the chance to test and co-develop their innovative digital solutions thoroughly with their target audience, drawing upon a state-of-the-art living lab toolbox that consists of scientifically validated R&D methods. Within all Living Lab activities users and stakeholders are involved early on and all through the innovation process. All projects are built on the following principles: multi-stakeholder involvement, multi-method, active user involvement and real-life experimentation. This approach provides a solution to innovation thresholds and challenges such as:
• Transforming ideas into prototypes users can interact with in their daily context.
• Shaping '(minimum) viable products' through an iterative, agile process.
• Designing business models through stakeholder analysis and go-to-market definition

Within the different Living Lab activities, imec.livinglabs engages all stakeholders in a lean and structured innovation process which is built around validating and invalidating all assumptions regarding the digital innovations in development. This data-driven approach is implemented using an internally developed business innovation methodology, user research methods, prototyping approach and panel management processes. Through our living lab projects, we continuously validate, improve and expand these methods and their supporting tools.

Imec.livinglabs' track record and experience are built on a decade of pioneering work in the Living Labs movement and has two general focus areas:

1. Bilateral, company-driven projects in which iterative user research steps provide insights on creating products and services which are optimally aligned with the intended users' needs. This way, new product introduction can be optimized by reducing risk and supporting company growth. On top of its local research projects, imec.livinglabs also offers this type of service delivery in European projects such as the EC FIWARE programme. Moreover, imec.livinglabs is also implementing this type of entrepreneurial living lab services in a public sector context.

2. Large scale, quadruple helix smart city pilots in which cities, enterprises, SMEs, entrepreneurs and end-users collaborate in projects with high economical and societal impact. In this context, imec.livinglabs is an experienced coordinator in multiple CIP programs. Today, imec.livinglabs is setting-up the 'City of Things'[10] Living Lab constellation in Antwerp, where a large end user community is involved in generating data and co-creating products on state-of-the-art IoT technology to provide all stakeholders insights on a new generation of digital services.

This is facilitated by the fivefold imec.livinglabs toolbox, built on different assets and expertise.
1. Panel and Community Management

Successful living lab research heavily depends on motivated test users and the right user-generated datasets for further analysis. The imec.livinglabs panel managers provide you with a dedicated panel

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[10] https://www.iminds.be/en/succeed-with-digital-research/go-to-market-testing/city-of-things

that is carefully selected – based upon your needs and goals, and using the 'lead user toolbox' methodology. This methodology consists of selecting users with innovation-related characteristics (e.g. usage intensity, expertise, dissatisfaction, etc.) and aims at getting relevant and diverse input from a smaller set of users. This core panel is monitored closely during the living lab activities with PanelKit. This is a platform we developed specifically to activate, motivate and analyze a test community. The imec.livinglabs panel includes more than 21,000 test users. A concrete example of how this potential can be applied, can be found in the yearly Digimeter[11] survey – studying media ownership and usage in Flanders, and breaking down the panel into a number of specific media consumption profiles.

2. Living Lab User Research Toolkit

In Living Lab projects, (potential) users become co-designers and testers of new applications or processes. The innovation runs through a number of adaptation and improvement stages, with a focus on all types of users and their specific needs and wishes. Living lab research also includes multiple stakeholders from the innovation ecosystem, thus driving collaboration and knowledge exchange. (Un)Expected solutions come to mind fast(er) during the living lab research, which can lead to more successful market launches.

In each project, imec.livinglabs conducts this process in two stages: an exploration stage that looks into current state (habits and practices, current solutions and the current user context), and an experimentation stage which focusses on the future state (new habits, new solutions and new usage contexts). This approach is in line with a quasi-experimental trajectory, where a pre-test assesses the current state-of-the-art in the innovation domain is assessed, also functioning as a baseline measurement to assess the added value of the innovation in the post-test stage.

The intervention stage encompasses all confrontations and real-life experimentation with the innovation, whereas the post-test stage assesses the potential added value of the innovation with regards to the baseline.

In every project, a customized mix of research methods and tools is assembled, based on the concrete requests and needs of the project instigator. Most of these methods and tools can be found in the constantly updated 'user innovation toolbox'[12].

3. Prototyping and Testing Support

Imec.livinglabs supports the translation of innovative ideas into a tried and tested software prototype. Whether the innovation is still in a conceptual phase or whether the first building blocks are already available, the prototyping team can help shape the product into something future customers can start using today.

Usually, a prototype is produced after all technological choices have been pinned down. In our view, however, prototyping is something you do to shape your idea into something tangible as early as possible:

We narrow down your concept to a product design with a sound technological architecture, building on our state-of-the-art view on software development.

We bring this product design to life using a wide variety of prototyping tools and methodologies, depending on the specific needs of your innovation project.

We engage your stakeholders and end-users to assist in co-creating your innovation, combining their insights with input from our own prototyping experts and user experience researchers.

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[11] https://www.iminds.be/nl/inzicht-in-digitale-technologie/digimeter
[12] https://www.iminds.be/en/userinnovation

End-users from our living lab panels test your prototype in real-life settings, allowing us to iteratively improve your prototype and product design.
We help you get your development team on track to developing a successful end product.

4. 360° Business Model Innovation

While user research focuses on the 'WHAT' (the value proposition) and 'WHO' (customer segments) questions, the business model focuses on the 'HOW' question (the go-to-market strategy). More specifically, the business model describes the strategy a company can use to optimally create, deliver and capture the value it offers to its customers.
We distinguish 4 levels:
- The value proposition describes the added value for a specific market segment or customer.
- The functional architecture describes the technical components, but also the processes, tasks and roles.
- The value network identifies the various stakeholders as well as their roles, and which shows the (inter)relationships between the stakeholders.
- The financial model focuses on the pricing model and the return of value across the value network; this is then linked to the cost model for obtaining and maintaining the required assets, the core tasks of the company and building the necessary ecosystem.

Business models are based on facts and assumptions. The big added value of a living lab project for business models is that it provides feedback on these (key) assumptions. During a business model workshop, we gather that feedback and work with you to adapt the business model and assumptions accordingly.

5. Cross-border Living Lab activities

Imec.livinglabs holds the ENoLL secretariat and is perfectly positioned to offer advice and support for cross-border projects. Moreover, imec.livinglabs has an established position as one of the leading European Living Labs and is involved in numerous European Living Lab projects. For many small and medium-sized companies, international expansion is a huge step with unknown cultural, scientific and technological obstacles. Testing, adapting and introducing new products and services outside the trusted home market thus often proves to be a challenge. Through European projects and the European Network of Living Labs (ENoLL), imec.livinglabs facilitates cross-border pilot projects and other living lab activities.

Science and Technology Parks as promoters of social entrepreneurial at universities based on the Quadruple Helix paradigm and LivingLab approach: e'UniHub'Iddeas
Juan A. Bertolin

On 10th of September2015, European Parliament published a resolution about social entrepreneurship and social innovation in combating unemployment. In such resolution, European Parliament defines social innovation to the development and implementation of new ideas, whether they be products, services or social organisation models, that are designed to meet new social, territorial and environmental demands and challenges, such as the ageing population, depopulation, balancing work and family life, managing diversity, tackling youth unemployment, the integration of those most excluded from the labour market, and combating climate change. On the other hand, social entrepreneurship or social and solidarity-based economy enterprises are companies that focus their business in getting impact on the society by means a set of social activities (that also could be profitable) but offering job opportunities especially for those most excluded from the labour market, for whom unemployment often turns into long-term unemployment. Indeed, the social entrepreneurship model often appeals to young people and gives them an opportunity to provide innovative responses to the current economic, social and environmental challenges and this approach does not mean to become third sector (non-profit organisations or NGO's) but to develop specific business models that could impact on society structure improving its life style and wealth.
Although Social innovation and social entrepreneurship is becoming nowadays a very fashion concept, they are actually quite old.
And how that Social Innovation could be achieved? by means of Social Entrepreneurs. Although this concept is still unclear as there are several models considered as social entrepreneurship ranging from for-profit businesses to hybrid models combining charitable work with business activities, to non-profit charities, voluntary sector organizations and non-governmental organizations. The concept of "social entrepreneurship" is not a novel idea, but in the 2000s, it has become more popular among society and academic research, notably after the publication of "The Rise of the Social Entrepreneur" by Charles Leadbeater.
In The Power of Unreasonable People, John Elkington and Pamela Hartigan describe social entrepreneurs' business structures as falling under three different models, applicable in different situations and economic climates:

•Leveraged non-profit: This business model leverages financial and other resources in an innovative way to respond to social needs.

•Hybrid non-profit: This organizational structure can take a variety of forms, but is distinctive because the hybrid non-profit is willing to use profit from some activities to sustain its other operations which have a social or community purpose. Hybrid non-profits are often created to deal with government failures or market failures, as they generate revenue to sustain the operation without requiring loans, grants, and other forms of traditional funding.

•Social business venture: These models are set up as businesses that are designed to create change through social means. Social business ventures evolved through a lack of funding. Social entrepreneurs in this situation were forced to become for-profit ventures, because loans and equity financing are hard to get for social businesses.

Social entrepreneurs seek to transform societies at large, rather than transforming their profit margin, as classic entrepreneurs typically seek to do. Social entrepreneurs use a variety of resources to bring societies into a better state of well-being bringing new solutions that combine the best of the non-profit, for-profit, and government sectors to make large-scale, lasting change. Social entrepreneurs – and the organizations they launch – apply innovative, often risk-taking approaches to create scalable solutions.

Thus, there is no wonder that social innovation, has been associated with the solution of various problems in the developed world, where the innovation environment works vibrantly, with several new social complex challenges, such as immigration, aging population and diversity. In the emerging and developing countries, social innovation is also quite important, since there are huge social imbalances, and that despite big economic efforts, poverty, and social problems persist.

Social innovation in these two contexts, can achieve a significant role in solving social problems, challenge that would require the action of the so called quadruple helix: government, universities, private companies and society. This interaction between so diverse stakeholders, would also require a positive environment for innovation, and science and technology parks and areas of innovation can bring great opportunities.

On the other hand, the European Commission has recognised that entrepreneurship education plays an important role in formal and informal education. Entrepreneurial Education has, therefore, become a strategic and relevant component in preparing young generations in requirements of living and creating economic wealth in the 21st century. Accordingly, the EU has set the 'Innovation Union' as one of the flagship initiatives of the Europe 2020 strategy (European Commission 2010/1161). More closely related to the educational system, "a sense of initiative and entrepreneurship" has been set as one of the transversal competences for lifelong learning (European Parliament 2005/0221).

In the 'Think small first' Act (European Commission 2008/394), enhancement of skills for SME encourages more research and actions oriented to Entrepreneurship Education (# VIII). Within the framework of above-mentioned Europe 2020 strategy, the Entrepreneurship 2020 Action Plan literally states in its point 2.1 that "Investing in entrepreneurship education is one of the highest return investments that Europe can make", and names having more entrepreneurs in Europe as a challenge because Entrepreneurship is a powerful driver of economic growth and job creation.

New start-ups created in a University Community (spin-offs) need experienced entrepreneurs from their sectors to boost their business and most of them are not focused in solving societal challenges. One of the main handicaps of young people launching business initiatives is one the one hand the lack of appropriate business management training and expert support during the process that involves an idea becoming a feasible and sustainable business model and on the other, the lack of pursuing to solve real problems. This idea needs to cope with given specific problems; that is to say, it has to be a solution to a real need and even better a social need.

Running a business initiative requires some sort of high qualifications in different skills: technical, management, financial, etc. Unfortunately, new entrepreneurs lack that knowledge, which is obtained only by the "training on the job" process.

Therefore, the success of new start-ups is linked not only to their business models but also to their capability to design a proper strategy for the company, and it implies to get a deep knowledge about business management. Unfortunately, most of the start-ups lack of such knowledge. Moreover, young people launching business initiatives is lack of appropriate expert support during the process that involves an idea becoming a feasible and sustainable business model. Running a business initiative requires some sort of high qualifications in different skills: technical, management, financial, etc. Unfortunately, new entrepreneurs lack that knowledge, which is obtained only by the "training on the job" process.

There are several entities that provide different kind of business management training but from academic perspective, not from practical one though. The involvement of industry experts as coachers or mentors could motivate the new entrepreneurs to be success.

Since the mid-1980s, Science and Technology Parks (STPs) have well facilitated entrepreneurship through mechanisms, such as incubators, mentoring provided by experts and "technology scouting". Universities have recently developed entrepreneurship training programmes to help students and post-graduates to consolidate their business ideas into real market niches. Professors with specific skills have led those programmes.

But Social Entrepreneurship require a different perspective and Science and Technology parks with living labs are the best tandem mechanism to make it happen. Using Quadruple Helix paradigm led by Science and Technology Park with additional continuous mentoring support will create a strong mechanism to provide the appropriate knowledge and experience to new social entrepreneurs based on Open Innovation 2.0 processes.

e'UniHub'Iddeas (http://www.espaitec.uji.es/eunihub) is a powerful mechanism launched by espaitec Science and Technology Park of Universitat Jaume I and its LivingLab (e'LivingLab) based on Quadruple Helix paradigm to:

•to set up a framework to help university students to reinforce their entrepreneur spirit by providing a deal of tools based on advanced training activities to facilitate the successful running of their business initiatives, supported by a given group of innovation ecosystem agents; e.g. academic, business experts, mentors, and the Town Councils of each municipality where students come from.

•train, coach and mentor new social entrepreneurs (coming from university community) supporting the pre-incubation process in a Science and Technology Park, with the support of the University, high-profile business management experts, administration experts that lead with societal challenges, in a systematic way and following a specific methodology to ensure the repeatable and reusability of the process. All the initiatives launched by social entrepreneurs will be supported bye'LivingLab of espaitec (methodologies, fablabs,...)

e'UniHub'Iddeas combines a trinomial interaction, "training+coaching+mentoring" (TCM), designed among the main QH agents, where

•Formal "Training", provided by University academics that covers academic business management skills
•"Coaching", provided by STP management professionals with the support of experts in different business knowledge areas (financial, human resources, commercial, marketing, etc.) plus experts from government in Societal challenges that will introduce to entrepreneurs about the main mechanisms used by Public Administration to support them. Those experts are businesspeople drawn from successful start-ups and SMEs in different industrial sectors who will provide their own experience in their companies' own growth process.
•"Mentoring", provided by high qualified Senior Executives, retired from their main jobs, but with ample experience in business management and Public Administrations (local governments), who will bring together aspects of training, and labour market integration, by promoting and facilitating self-employment and entrepreneurship in the University Community, and policy making by Public Administrations' active implication. Mentoring process implies a "Long Way Companion" by the Senior Executives where on a daily-basis will keep contact with the startup details, issues and other matters that could affect the performance of the process.

The main expected results are:

•Developing partnerships between education and business agents to reduce failure in entrepreneurship, and focused in social entrepreneurship mindset based on Co-creation philosophy developed ine'LivingLab

•Facilitating the validation of non-formal and informal learning, and their permeability with formal education pathways

•Fostering the assessment of transversal skills for business creation to ensure entrepreneurs' business management capabilities

•Promoting the take-up of practical entrepreneurial experiences in education, training and youth work

Basically, the aforementioned impact is not easy to measure. Nevertheless, it is expected to consider a set of Key Performance Indicators that will help envisage how the programme develops:

›- Number of students participating in the e'UniHub'Iddea

›- Number of social start-ups created in each edition and incubated in e'LivingLab

›- Number of social start-ups that successfully pass the "Death Valley" (3 years)

›- Quality of the profiles of the new young entrepreneurs who will create social startups in the e'UniHub'Iddeas thanks to the TCM Methodology

The Critical Success Factors (CSFs) of thee'UniHub'Iddeas are the following:

›Increase the number of students encouraged to participate in the e'UniHub'Iddeas

›Increase the number of start-ups that pass "Death Valley" after 3 years

Specifically, thee'UniHub'Iddeas is expected to:

›help Universities' Entrepreneurship departments to design efficient training plans and added value to young entrepreneurs

›motivate students to identify innovative solutions to societal challenges with the support of Quadruple Helix elements.

›determine how coaching plans can be designed and be supported by experts in different knowledge areas, who will provide expertise and updated samples to young entrepreneurs, and always in relation with the training plans provided by Universities' Entrepreneurship departments

›establish a roadmap led by senior (retired) executives who, fully connected with training and coaching plans, will be able to support, monitor and provide advice to young entrepreneurs' projects as the main point of contact for all their needs

The requirements for participation in the e'UniHub'Iddeas program are:

›Student from University (degree, postgraduate or PhD)

›Idea not formalised as current business yet

›Technological and innovative scope: under this heading companies that have a technological component, either developing products or using technology to provide design services or products are considered.

›Ambition of entrepreneurs. Commitment and involvement in the project.

›Solution provided has to focus its design and implementation in societal challenges identified.