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In Memoriam

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LANDSCAPING LIVING LABs FOR COLLABORATIVE RESEARCH

Abstract: Living Labs represent interesting flexible ecosystems to foster open innovation as they implement infrastructures where stakeholders are involved to create seamless interaction and collaborative settings. This paper firstly describes the concept and architecture of the Living Labs then it focuses on the main models and state-of-the art methodologies. Against this background selected legal issues (i.e. Intellectual property rights and data protection) will be analysed and a focus on contractual terms will be provided. The theoretical study will make use of the practical experience of the "LIVINGAGRO project" to address the effective dimension and implementation of Living Labs.

1. — *Introduction.*

Since the entry into force and implementation of the Lisbon strategy in the year 2000, openness and innovation[(1)] have been crucial policy challenges and

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[(1)] For an in depth analysis of innovation and innovation processes see R. Boutellier, O. Gassmann, M. von Zedtwitz, *Managin Global Innovation. Uncovering the secrets of future Competitiveness*, 2nd ed., Springer, 2000.

opportunities in Europe. On the one hand open innovation[2] lies at the heart of one of the pillars of Horizon Europe, the research and innovation Framework Program for the period 2021-2027[3]. On the other hand, networked and collaborative settings involving user, stakeholders, governments, academics and industries pose several organizational and structural questions.

In this context Living Labs could be hailed as interesting flexible ecosystems to foster the open innovation[4] model because of their being platforms where stakeholders are involved to create seamless interaction and mash-up for ideas in innovation ecosystems[5]. The implementation of such infrastructures could be achieved by a successful mixture of collaborative environments, open innovation platforms, user centric product/service development methods, and public private partnerships. Against this background, Living Labs hold potentially disruptive and long-lasting transformational effects on the European industry, markets and regional economies[6].

This paper, based on the practical experience of "LIVINGAGRO project"[7] will address some of the juridical issues emerged during the project lifespan, starting from a theoretical introduction of the LL structure and then focussing on IPR, privacy and contractual issues.

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[2] H.W. Chesbrough, *Open Innovation. The New Imperative for creating and Profiting from Technology*, Cambridge, MA: Hardvard Business School Press, 2003.

[3] See *www.interregeurope.eu/policylearning/news/6330/learn-about-horizon-europe-and-the-european-innovation-council-eic/*.

[4] B. Bergvall-Kåreborn, C.I. Eriksson, A. Ståhlbröst, J. Svensson, *A milieu for innovation: defining living labs*, in K.R.E. Huizingh, S. Conn, M. Torkkeli, I. Bitran (eds.), *Proceedings of the 2nd ISPIM Innovation Sympo- sium: Simulating Recovery - The Role of Innovation Management*, 6-9 December 2009, New York City, 2010.

[5] See *ec.europa.eu/digital-single-market/en/open-innovation-20*.

[6] For an analyisis of the LLs business model archetypes see Ingrid Fasshauer, open Innovation Business Models-The Case of Living Labs in France. EURAM Conference, ESG UQAM, Jun2021, Montréal Québec, Canada.

[7] The LIVINGAGRO project is financed under the ENI CBC MED Program and pursues as a general objective the achieving technology transfer and commercialization of research results in the Mediterranean agroforestry sector, through the creation of two Living Labs (LL1 - Multifunctional Olive Systems and LL2 - Grazed Woodlands) based on Open Innovation approaches.

The project, indeed, has helped to identify certain legal application challenges of LLs to then consequently to verify the way these are tackled through contractual instruments. To this end, the analysis firstly starts with the scrutiny of the LLs main features in order to identify the main questions arising from the collective nature of the innovation process.

2.— *Living Labs: concept, architecture and methodologies.*

The concept of 'Living Labs' [hereinafter referred to as LLs] is often credited[8] to Professor William J. Mitchell, Massachusetts Institute of Technology (MIT). Having observed the potential presented by emerging technologies, particularly computing, sensing, and ICT, Mitchell put forth a proposition to shift innovation research from controlled laboratory environments to real-life contexts. Specifically, he suggested the establishment of "living" environments, such as buildings or cities, in order to observe and analyse individuals' reactions to and engagements with innovations. Consequently, these Living Labs would serve as spaces wherein designers and researchers could derive inspiration by studying users and test their hypotheses through empirical experimentation[9].

In Europe, the idea led to a number of scattered initiatives and in 2005, Eriksson, Niitamo and Kulkki extended its concept, starting from von Hippel[10] and Thomke and von Hippel's[11] research on the innovative potential of users, they suggested an higher and earlier involvement of the users in the product development process. The year 2006 marked an important

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[8] B. Dutilleul, F.A.J. Birrer, W. Mensink, *Unpacking European Living Labs: Analysing Innovation's Social Dimensions*, in *Central European Journal of Public Policy*, 2010, 60-85; L. Compagnucci, F. Spigarelli, J. Coelho, C. Duarte, *Living Labs and user engagement for innovation and sustainability*, in *Journal of Cleaner Production*, 2021, 289, 125721.

[9] On the basis of this idea several facilities were established in the United States as "PlaceLab" created by MIT in 2004, an apartment equipped to record its inhabitants.

[10] E. Von Hippel, *The sources of innovation*, Oxford University Press, Oxford, 1988.

[11] S. Thomke, E. von Hippel, *Customers as innovators: a new way to create value*, in *Harvard Business Review*, 2002.

step in the development of the European Living Lab movement. Early that year, two projects funded by the European Commission – CoreLabs[12] and Clocks – were kicked off to advance, coordinate and promote a common European innovation system based on Living Labs[13]. In October, participants of the Conference "Networked Business and Government: Something Real for the Lisbon Strategy" committed to the Helsinki Manifesto[14], advancing Living Labs as one key solution of the EU problems. One month later, a pan-European network of 19 Living Labs was launched by the Presidency of the European Union under the label "European Network of Living Labs" (ENoLL)[15]. Since then, the network has enrolled new "waves" of regional organisations every year.

From the definition point of view, it is important to underline that it doesn't exists a unique definition of LLs, since each of them can be characterized by multiple factors and serve several purposes[16].

From the operational point of view, LLs are both practice-driven organisations that facilitate and encourage open, collaborative innovation in a real-life environments where open innovation and user innovation processes can be studied and create new solutions to solve specific issues. LLs operate as intermediaries among citizens, research organisations, companied, cities and regions for joint value co-creation, rapid prototyping or validation to scale up innovation and businesses. LLs have common elements but multiple different implementations[17].

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[12] Co-creative living labs for CWE: *cordis.europa.eu/project/rcn/79424/factsheet/en.*

[13] European Commission, *Living Labs for user-driven open innovation: An overview of the Living Labs methodology, activities and achievements, Brussels, European Commission, Information Society and Media*, 2009.

[14] Finland's EU presidency, *The Helsinki Manifesto 20.11.2006*, «We have to move fast, before it is too late», 2006.

[15] European Network of Living Laboratories (ENOLL): *enoll.org.*

[16] ENOLL defines living lab as follow: «Living Labs are defined as user-centred, open innovation ecosystems based on systematic user co-creation approach, integrating research and innovation processes in real life communities and settings»: *enoll.org.*

[17] See *enoll.org/about-us/*.

Despite the various possible structures, LLs share some common central elements[18] that enable their functioning[19]: *a)* Multi-method approaches: there is no single Living Lab methodology, rather these Labs integrate and tailor various user-centric and co-creation methodologies to align optimally with their objectives. *b)* User engagement: this approach is rooted in the origins of Living Labs, considered as a key factor to reach the objective of the chosen activity. Fundamental is the users involvement since the beginning of the process. *c)* Multi-stakeholder participation: along the user involvement, including all relevant stakeholders is of crucial importance. To better achieve the goals of the project it is important to attract and include in the LL activities representatives of public and private sector, academia and citizens. *d)* Real-life setting: a very specific characteristic of Living Labs is that the activities must take place in real-life environments to gain a thorough overview of the context. *e)* Co-creation: In customary practice, activities are commonly structured as top-down experiments, wherein users are primarily regarded as passive factors rather than active participants.

In contrast, the Living Lab approach aims to achieve mutually beneficial outcomes, which emerge as a consequence of active engagement from all stakeholders involved, commencing from the outset of the process.

In general living labs aim to develop new knowledge, innovations, services and more, through creative processes that actively involve users through a process of real-life testing and sharing of information and knowledge. The ultimate scope of LLLs is to create new knowledge related to targeted subject matters by actively testing and organizing classical processes[20] in an alternative way.

As for the LLs definition, there is no an unique methodology but rather core common principles in LLS methodologies: active user involvement,

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[18] Living lab methodology handbook, U4IOT, 2017.

[19] For an analysis of the LLs design see M. Gray, M Mangyoku, A. Serra, L. Sánchez, F. Aragall, *Integrating Design for All in Living Labs*, in *Technology Innovation Management Review*, 2014, pp. 50-59.

[20] Within the framework of LLs the term processes refers to product development, production, policymaking, delivering services, etc.

real-life experimentation, multi-stakeholder and multi-method approaches. Furthermore, it is worth taking into account the stakeholders' assets and capabilities, as well as the complex multi-stakeholder framework in which the multitude of activities take place. Based on literature review and experiences and observations of Living Labs activities and practices, Schuurman [21] made a distinction between three different levels of analysis within Living Lab phenomena: *a)* macro or organizational level, where the Living Lab is a set of actors and stakeholders organized to enable and foster innovation, typically in a certain domain or area, often also with a territorial link or focus. These organizations tend to be Public-Private-People partnerships [22], *b)* meso or project level [23], where Living Lab activities take place following a mostly organization-specific methodology in order to foster innovation and *c)* micro or user activity level, in which the diverse assets and capabilities possessed by the Living Lab organization materialize in distinct activities that entail the involvement of users and/or stakeholders.

In order to establish a methodological framework that aligns the individual user involvement activities at a micro level, Schuurman [24] proposed the adoption of a quasi-experimental approach. This approach encompasses a pre-measurement phase, an intervention phase, and a post-measurement phase, wherein the intervention serves as a real-life experiment. Based on the aforementioned rationale, it becomes feasible to identify three primary components within Living Lab projects, corresponding to the different phases of innovation development: *a)* Exploration, aimed to

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[21] D. Schuurman, *Bridging the gap between Open and User Innovation? Exploring the value of Living Labs as a means to structure user contribution and manage distributed innovation*, doctoral dissertation, Ghent University, 2015.

[22] M. Westerlund, S. Leminen, *Managing the Challenges of Becoming an Open Innovation Company: Experiences from Living Labs*, in *Technology Innovation Management Review*, 2011, pp. 19-25.

[23] Living lab metodology handbook, U4IOT, 2017.

[24] C. Veeckman, D. Schuurman, S. Leminen, M. Westerlund, *Linking Living Lab Characteristics and Their Outcomes: Towards a Conceptual Framework*, in *Technology Innovation Management Review*, 2013, pp. 6-15.

investigate the "current state" and designing possible "future states"[25]; *b)* Experimentation, in which real-life test of one or more proposed "future states"[26] are provided. Evaluation, assessing the impact of the experiment with regards to the "current state" in order to iterate the "future state"[27].

Accordingly, it is possible distinguish between the "current state" and the "future state", where the existing, current state of being is opposing to possible future states, that are the targets of LLs.

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[25] In terms of Open Innovation, this phase can be labelled as involving mainly exploration processes. Exploration is defined as «purposive inflows of knowledge or technology, aimed at capturing and benefiting from external sources of knowledge to enhance current technological developments». First of all, exploration is used to understand the current solutions people use, the current habits they display and the current context in which people use these solutions and have developed these habits. Subsequently, exploration is used to develop and share ideas for solutions to these needs, in order to come to concrete innovation concepts. This exploration allows the measurement of potential impacts and effects of the experimentation stage in order to measure the effects of the innovation

[26] Experimentation, which is the second stage within an innovation development process, aims at developing and testing a prototype that can take many forms, from tangible MVPs (Minimum Viable Products) to intangible services or experience design prototypes. As a matter of fact, in the experimentation stage, the innovation is presented as a prototype (both for products and services) to the users in the form of a new solutions, which potentially triggers new habits and new contexts of use. The goal of this phase is to understand user reactions and attitudes to the proposed solutions, and to study behaviour, testing solutions in "as-real-life-as-possible" contexts see Living lab methodology handbook, U4IOT, 2017. The experimentation stage puts the designed solution to the test, as much as possible in a real-life context, and allows a decision to be made on whether to head back to the exploration stage to iterate your solution, or whether to proceed to the evaluation stage.

[27] The third and final stage consists of evaluating the innovation. It enables to generate a post-measurement of the intervention and compare it to the pre-measurement benchmark, illustrating potential impact and added-value created by the innovation. This stage can also consist of the post-launch activities, where actual adoption and usage of the innovation is monitored in order to re-design or add new functionalities according to the needs of existing or new market groups, see D. Schuurman, *Bridging the gap between Open and User Innovation? Exploring the value of Living Labs as a means to structure user contribution and manage distributed innovation*, cit.

3. — *Categorizing and evaluating Living Labs models.*

According to the type of participant driving the innovation activities, LLS be categorized into utilizer-driven, enabler-driven, provider-driven, and user-driven (or user-com- munity-driven)[28] To achieve the benefits of the LLs approach, participants should be aware of these differences and engage in actions and roles accordingly[29] to avoid management challenges in relation to traditional projects.

A typical operating model for LLs foresees a project-based development, where collaboration and user engagement are organized through regular engaging events such as videoconferences/streaming events. Indeed LL networks can be defined as managed collaboration networks (as opposite to self-organizing networks), which feature internal transparency and direct communication. The main focus is on both user creation and innovation processes support by distributed, organised communities. Members of such a network collaborate and share knowledge directly with each other, rather than through hierarchies. They come together with a shared vision, because they are intrinsically motivated to do so and seek to collaborate to advance an idea or a concept[30]. Pisano and Verganti presented, in their Harvard business review articles[31], a matrix that lists different collaboration models related to various contexts and cases. Within the model, the nature of collaboration hinges upon both ownership rights and the nature of the innovation that the collaborative network seeks to identify. The pivotal inquiry regarding the model pertains to the extent of openness inherent in the collaboration framework, as well as the degree of authority assumed by

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[28] S. Leminen, *Q&A. What are Living Labs?*, in *Technology Innovation Management Review*, 2015, pp. 29-35.

[29] *Ibidem*, p. 32.

[30] J. Eschenbächer, K.D. Thoben, P. Turkuma, *Choosing the best model of living lab collaboration for companies analysing service innovations*, in *Projectics/proyéctica/projectique*, 2010, pp. 11-39, DOI10.3917/proj.005.0011.

[31] G.P. Pisano, R. Verganti, *Which kind of collaboration is right for you?*, in *Harvard Business Review*, 2008.

the network manager or orchestrator. Consequently, these choices heavily influence the innovativeness and nature of the expected outcome[32]. Other approaches have been investigated looking for examples of practical implementation.

The experience arising from the Alcotra Innovation Project[33] is particularly interesting since, for the first time, cross border LLs have been jointly developed and implemented by neighbouring countries[34].

The first method investigated by Alcotra Innovation Project uses the so-called Federation approach[35], which entails the presence of multiple independent thematic Living Labs that organically emerge within the ter-

[32] The authors took in consideration four models: A) the Elite Circle type of governance model, one company selects the network participants, defines the problem, and chooses the optimal solutions according to its needs. This type of approach works well in cases where the solutions are highly confidential and require specific skills and competences. The Management model is hierarchical and the roles are clearly defined. B) the Innovation Mall model, one company posts a problem within the community allowing anyone to propose solutions. After a period of time, the company chooses the solutions it likes best. This model works well for service and usability testing, when companies target improvements or additions to the existing products and portfolios. Control and ownership are in the hands of the leading company, which also defines the management and compensation models. C) the Innovation Community, where anybody can propose problems, offer solutions, and decide which solutions to adopt. This model is well suited for solving societal problems, where there are objectives beyond economic value maximization. In corporate sector this model can be used for systemic innovations and defining new research and development areas and markets. D) the Consortium, is a closed model, which operates like a private club with participants jointly selecting problems, deciding how to conduct work, and choosing solutions. This model is characterized by a particularly clear focus understanding business cases and participation of highly specialized professionals.

[33] The Alcotra Innovation project is funded by the Alcotra Italy-France 2007-2013 territorial cross-border cooperation program. The project aimed to create and develop a culture of partnership and action among the innovation actors on both sides of the Alpine frontier, in order to improve their innovation capacity and ability to compete internationally with better results. It was the first time that a living lab approach is not only developed between two neighboring countries, but is also implemented jointly, as if at last there were no more barriers that prevent many actors from working in a multinational perspective.

[34] Alcotra, *Guidelines on Cross-border Living Labs*, 2013.

[35] Cross-border Living-Labs, *The Federation approach*, Santoro, 2008.

ritorial boundaries of each participating country and subsequently achieve cohesion through the establishment of cross-country links, clusters, and multi-location experiments. A significant advantage of this approach lies in its decentralized management and governance, allowing it to align with various models for the establishment and growth of Living Labs. This approach also facilitates the possibility of sharing some or all of the pertinent key assets (such as local communities, ICT infrastructures, methodologies, etc.) in the context of cross-border collaboration. Consequently, a potential learning process can be initiated between both nascent and well-established Living Labs, regardless of whether they operate within the same country or region.

The concept of a cross-border Living Lab aspires to progress beyond this logical trajectory, providing innovative firms with an opportunity to explore new markets and research clusters, internationalize their operations, and further expand their business endeavors. Moreover, it enables the testing and validation of advanced technologies with prospective end users in diverse cultural and linguistic contexts.

Indeed, the practical feasibility of the Federation approach necessitates the existence of a range of consolidated Living Lab experiences within the participating countries, along with a relative absence of thematic specialization. Such conditions allow for the representation of the same national Living Lab within multiple transregional clusters through the implementation of independent and parallel technology trials.

An alternative option to realize a cross-border Living Lab is represented by the Unitary model, using the Umbrella approach[36], which encompasses the presence of a central, lightweight management entity responsible for facilitating the implementation of trials within a transnational setting. This framework is supported by multiple localized "chapters", each representing a participant country, structured as conventional Living Labs that are accessible to end-users located in any of the four countries involved in the project.

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[36] Cross-border Living-Labs, *The Umbrella approach*, Schumacher, 2011.

Specifically, an overarching structure composed of representatives from all regional "chapters" of the cross-border Living Lab assumes the responsibility of establishing common guidelines, assessment tools, and monitoring systems. These resources are provided to local stakeholders, who are granted autonomy to initiate one or more pilot actions within their respective regions, spanning a range of thematic domains while adhering to a shared methodological approach. The distinguishing characteristics of the Umbrella approach lie in its unified governance framework and the existence of a shared repository of methods, tools, and experiences among all the regions engaged in the pilot actions. However, the implementation pathway or specific rules for the cross-border trials are not prescribed, as they are expected to evolve organically based on emerging interests and converging requirements of the various national actors involved. In this regard, the federation approach and the Umbrella approach exhibit notable similarities in their ultimate outcomes.

These aforementioned examples merely encompass a fraction of the existing state-of-the-art methodologies employed in the context of Living Labs, which inherently embody a dynamic framework characterized by ongoing implementations. This, brought forth a multitude of legal issues, among which the most interesting will be thoroughly examined and addressed in the subsequent chapters.

4. — *Selected legal issues in Living Laboratory environments.*

The lack of a technical and unique definition of LLs implies that they represent a very vague object to be analysed from a legal point of view. Furthermore, the variety of LLs schemes implies that the issues under scrutiny could be different from one LL context to one another. Against this background and considering the Livingagro experience certain legal aspects should be taken into consideration when projecting LLs. More precisely the following sections will highlight IPRs concerns and the privacy/data protection management.

LLs are extremely effective in producing knowledge and innovations [37] that are transferred to both the society and the markets and because of their being rooted on open innovation the applications and services developed should to be available within and outside the LLs environment. But, certain rights, freedoms and interests may risk to hamper innovation when specific legal requirements are applied in the management of LLs.

Besides the ethical dilemmas concerning the human-digital interactions and participated processes [38], the following analysis will take into consideration the legal aspects regarding the way LLs multi-contextual environments deal with privacy and innovation. On the one hand the valuable concepts of openness and partnership/membership promote the development of products and services, stimulate the data sharing and foster communication in LLs, on the other hand intellectual property rights and the requirements for the legal processing of personal data significantly influence the free access to knowledge and the adoption of open standards [39].

Within the governance of LLs (implying both administrative and managerial measures) the management of IP, the safeguard of privacy and the handling of personal data are relevant tasks.

In dealing with these aspects, the following sections will take into account the way open-innovation and the collaboration models retain/safeguard certain rights [40] in LLs, whose structure aims to ensure both the sharing of knowledge and respect the roles/identities and efforts of each member. This is not just a mere theoretical issue and choosing an open and collaborative environment or a closed innovation model influences the governance

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[37] S. Leminen, M. Westerlund, A.G. Nyström, *Living Labs as Open –Innovation Networks*, in *Technology Innovation Management Review*, 2012, pp. 6-11.

[38] F.J. Sainz, *Emerging ethical issues in living labs*, in *Ramon Llull Journal of Applied Ethics*, 2012, pp. 47-62.

[39] M. Westerlund, S. Leminen, C. Habib, *Key constructs and a definition of living labs as innovation platforms*, in *Technology Innovation Management Review*, 2018, pp. 51-63; M. Bogers, J. West, *Managing Distributed innovation: strategic utilization of open and user innovation*, in *Managing distributed innovation*, 2012, pp. 61-75.

[40] Open Innovation and IPRs: Mutually incompatible or complementary institutions?, Journal of Innovation &Knowledge, vol. 4, issue 4, 2019, pp. 248-252.

architecture of the LLs (flat of hierarchical)[41]. As a matter of fact LLs do not provide a linear closed innovation process but rather a decentralised open innovation one[42]. This means that LLs not only envisage a domain of distributed innovation but also challenge the top-down model of innovation and its sharing and distribution as generally realised by one single operator. While the managerial solution to the distributed nature of LLs could be faced with organizational and administrative tools, it is relevant to highlight the way laws and legal instruments[43] perform in the digital setting in order to both avoid that knowledge and innovation are excessively fragmented or technically parcelled[44] and to ensure appropriate safeguards of those involved in the co-creation and collaborative process.

5.— *IPR concerns in LLs.*

The nature of LLs as user-centric and user-driven communities, which implies an active participation and creation role of the users, has the potential to generate IPR concerns especially when users play the role of contributors, co-creators, developers[45]. This triggers a reflection about the handling of IPRs in LLs and consequently an evaluation of the status of the users in such contexts.

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[41] J. Eschenbächer, K.D. Thoben, P. Turkuma, 2010/2(5) *Choosing the best model of living lab collaboration for companies analysing service innovations*, cit., p. 15; R. Verganti, G.P. Pisano, *Which Kind of Collaboration is right for you?*, cit.

[42] J. Eschenbächer, K.D. Thoben, P. Turkuma, 2010/2(5) *Choosing the best model of living lab collaboration for companies analysing service innovations*, cit., p. 19.

[43] H. Schaffers, P. Turkama, *Living Labs for Cross-Border Systemic Innovation*, in *Technology Innovation Management Review*, 2012, pp. 25-30.

[44] M. Borgers, J. West, *Managing distributed innovation: strategic utilization of open and user innovation*, in *Creativity and Innovation Management*, 21, pp. 61-75.

[45] As far as the role of user is concerned, it is possible to refer to contributor (creating with the user) who is engaged in an interactive process and co-creator (creating by the user) who is part of the innovation process. See S. Leminen, M. Westerlund, A.G. Nyström, *On becoming creative consumers-user roles in living labs networks*, in *International Journal of Technology Marketing*, 2013, pp. 33-52.

At first look and ontologically, open innovation and IPRs appear to be incompatible: the former represents a paradigm that allow the flow of ideas and knowledge, the latter results in the enclosure and exclusion of others from using. Despite this first theoretical contradiction, partnerships and consortia represent the most effective and commonest networks to carry out innovation research and interoperability. IPR issues are frequent in LLs[46] and their legal regime is closely analysed in user-drive open innovation processes[47].

One of the main requirement in IPR law is the presence of an author, an inventor or contributor being the identifiable person who creates the tangible/intangible property. User communities do not always allow for the identification of one single person as author/inventor and copyright in the context of community-created content could belong to the whole community. Additionally, legislation about joint works and requirements for collective works may vary from one normative framework to another. Furthermore, it was highlighted that in non-profit communities, the main question in the context of IPRs concerns the moral rights and the interest of those involved in being credited as author/s[48].

Further difficulties arise when tackling rights in a community-created settings and contents[49], especially when functions and applications are implemented and improved after their creation by multiple users. Who owns the copyright of the ameliorated functionality? As a matter of fact in cooperative settings no one single author has the exclusive right to allow distribution

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[46] The four major IPRs in innovation activities in LLs are patents, copyrights, trademarks and design rights and their use represents the signal of both technological and design capacity and reputation and strength. See J. Edler, H. Cameron, M. Hajhashem, *The insersection of intellectual property rights and innovation policy making. A literature review*, WIPO available at *www.wipo.int/edocs/pubdocs/en/wipo_report_ip_inn.pdf*.

[47] O. Pitkänen, *Legal aspect of living labs*, in *Intellectual journal of product development*, 2012, pp. 8-22.

[48] O. Pitkänen *Living labs legals*, in J. Schumacher, V.P. Niitamo (eds.), *European living labs. A new approach for human centric regional innovation*, 2008, pp. 139-145.

[49] H. Hietanen, V. Oksanen, M. Välimäki, *Community created content: Law, Business and Policy*, Turre Publishing, Helsinki, 2007.

or even grant licenses for others. It is a milestone in the IPR law the exclusive right of the author to control and assent that the work will be copied and distributed. In the context of LLs, such an issue should be managed through the adoption of the "users and innovators" approach throughout all stages of the innovation process (i.e. service and product development cycle) also integrating the multi-stakeholder collaboration [50].

The status of the users as co-creators /developers should be intrinsic in the LLs architecture but also effectively ruled in agreements in which knowledge and methodology of the LLs are set. This could be done by establishing that innovation is created and validated through collaborative inputs, putting at core the user experience (starting from the user involvement, user-co-design process finally leading to product or service creation) [51].

Taking into account the position of users within LLs, it is also relevant to consider that as community environments, they would not exist without users that both create and use/implement the works. As far as the status of the users is concerned, it is particularly problematic to ensure users to share their contribution without losing the legal control on it. It is an issue whether to differentiate copyright licenses from other sharing and usage policies [52].

The IPRs and exploitation of results are dealt with at a very strategic level engaging various partners and LLs generally set forth the discipline and rules concerning IPRs prior to the starting of projects in the Consortium agreement. The main objectives of these agreements are the establishment, use and sharing of IP as well as licensing taking into consideration the investments/developments and costs/profits.

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[50] M. Eriksson, V.-P. Niitamo, S. Kulkki, K. A. Hribernik, *Living labs as a multi-contextual R&D methodology*, 2006 IEEE International Technology Management Conference (ICE), in *doi.org/10.1109/ICE.2006.7477082*.

[51] For the user position also see P. Ballon, J. Pierson, S. Delaere, *Test and experimentation platforms for broadband innovation: examinig europea practice*, in *Conference Proceedings of 16th European Regional Conference by the International Telecommunications Society (ITS)*, Porto, Portugal, 4-6 September, 2005.

[52] H. Hietanen, V. Oksanen, M. Välimäki, *Community created content. Law, Business and Policy*, cit. p. 11.

LLs may instruct the users to licence their content in a way that others can freely use it. It is possible taking as example, Creative Commons licences[53] that can be applied to authorise everybody to use the content. Unfortunately, there could be reasons to use more restrictive terms or there might be specific needs to which creative commons licences are not suitable. Thus, it is difficult for a living lab to try to force the users to apply certain terms and yet ensure that they are using the service in a natural way as widely as possible.

Taking Livingagro as reference to deal with the aforementioned IPR issues, the main aspects addressed were: 1) the allocation of the ownership of innovation especially in case of co-creation and open innovation; 2) access rights type to all LL members (royalty free, access to background, access to foreground); 3) use of creative commons.

6. — *Privacy and data protection in LLs.*

The legal arrangements to safeguard privacy and for the data protection could be quite complex issues in the making of LLs. When disruptive technologies are used, several fields of law are involved: human rights, administrative law, criminal law and data protection law.

Article 8 ECHR concerning the human right to respect of private life, the allied scrutiny on the activities and data relating to private life of an individual are essential in this context as they imply an evaluation on the nature of the interferences (whether or not arbitrary) and risks of being harmed from data processing. Of course such an oversight requires a case-specific and factual assessment.

Administrative rules are generally used to establish procedures to address the management of technological smart environments when citizens are involved. In particular they have the form of audits, data governance policies, protocols providing information about access to data, retention and sharing of data among entities.

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[53] For further details see *creativecommons.org*.

As far as security claims, cybercrimes and the need to safeguard the digital rights from illegal access to/and manipulation of digital information are concerned, criminal law provides fragmented patterns of protection to fight frauds and cyber crimes. Such crimes not only cause economic losses and infringe property interests but rather seriously affect the enjoyment of freedoms and rights by decreasing the sense of security of digital environments. Criminal law determines criminal responsibility, establishes the elements of the crime (e.g. crime location, scope, time) also trying to update the concepts of victimizations and understanding the psychological vulnerabilities of the victims.

Data protection law has increasingly gained a leading role in the management of data-based context and it is frequently applied to deal with LLs. Indeed, the EU regulation requires accountability and a data protection impact assessment for the processing of data that would result in risks for the freedoms and rights of persons.

Privacy concerns essentially rise when considering that the use of digital technologies is not neutral *per se* and certain privacy risks occur when personal information are associated with other/further commercial and economic interests. Furthermore, LLs as "public spaces"[(54)] could increase visibility and privacy-related risks, for example surveillance and profiling. The protection of privacy should imply the use of privacy-by-design tools, anonymisation of uploaded documents and the blurring of faces in visual contents. In collaborative and co-creative infrastructures, awareness of the data shared, associated rights and informative duties not only ensure data transparency but also make data subjects rational decision-makers capable to understand and evaluate their involvement. As a matter of fact, individuals' behaviour is context-sensitive and strongly relies on the kind of risks they could face[(55)].

When it comes to the processing of personal data in LLs, legal require-

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[(54)] M. Galič, *Surveillance and privacy in smart cities and living labs: Conceptualising privacy for public space*, doctoral thesis, Tilburg University, Optima Grafische Communicatie, 2019.

[(55)] B. Morgan, K. Yeung, *An Introduction to law and regulation: text and materials*, Cambridge University Press, Cambridge, 2007, pp. 97-99.

ments must be addressed such as the purposeful use of personal data, informed consent of the data subject, accountability.

In the LLs scenario the processing of personal data should be grounded on acceptable purposes and specifically consented by the data subjects.

At first, the LLs management should consider the kind of data, the processing mode, where and by whom data are used in order to make proper agreements and structure a reliable personal data policy.

As far as the data type is concerned, the principal *summa divisio* concerns personal and non-personal data. This firstly influences the ways data are collected and used, then attention should be cast on whether special categories of data are involved.

Pursuant to the definition of the Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) (hereinafter referred to as GDPR) personal data means any information relating to an identified or identifiable natural person ('data subject'); an identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person (art. 4 (1)). This definition has been further explained by the Article 29 Working Group that assigned this notion a very broad meaning covering all information which may be linked to an individual.

Both the identifiability of a natural person and the wide content assigned to information are relevant aspects when data are collected within LLs[56]. Having due regard to the processing, it is crucial to state that the use and process of personal data occur with the consent of the data subject (and consent is revocable at any time) for well defined purposes (e.g. to allow

[56] M. Galič, R. Gellert, *Data protection law beyond identifiability? Atmospheric profiles, nudging and the Stratumsied Living Lab*, in *Computer Law & Security Review*, 2021: *doi.org/10.1016/j.clsr.2020.105486*.

access to LLs platform; to enable interactions)[57]. As far as profiling is concerned, it is worth considering whether certain generated profiles are built upon data pertaining to individuals and the data subject could be known by using data mining algorithms.

When it comes to the security measures of LLs infrastructures, the most relevant aspects to be taken into account are the breaches in privacy and security due to stolen and hacked information, cyberattacks and corrupted data by unauthorised individuals[58]. Besides the technical and organisational measures that could be identified to face security attacks and to model the ecosystem of LLs, a comprehensive approach to data security should be set, especially through the adoption of Data Protection Policies tackling data protection and liability. According to the current GDPR, the Policy should inform about: a) the responsible for the processing of the data (identification of the controller); b) terms and conditions of the processing; c) the kind of data collected; d) rights and access to information and e) the security measures of the data[59].

Against this background and from a legal point of view, the processing of personal data in LLs may imply the involvement of more than one actor in handling data.

The GDPR envisages the relationship among multiple controllers and introduces rules for joint controllers, i.e. two or more entities determining the purpose and the means of processing operations[60]. Joint controllership occurs when entities are involved in the same processing operation and they jointly define purposes (e.g. purposes are the same and/or are complementary) and means (e.g. platforms, tools and infrastructures that allow parties to process the same personal data and purposes and means are jointly de-

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[57] When data are used for new purposes, not covered by the previous expression of consent, it is necessary to seek the re-consnet for the new processing, unless authorised by law.

[58] K. Kioskli, D. Dellagiacoma, T. Fotis, H. Mouratidis, *The supply chain of a Living Lab: Modelling security, privacy, and vulnerbility issues alongside with their impact and potential mitigation strategies*, in *Journal of Wireless Mobile networks, Ubiquitous computing, and Dependable Applications* (JoWUA), 2022, pp. 147-182.

[59] For the livingagro project see Privacy Policy at *livingagrolab.eu/it/privacy-policy/*.

[60] GDPR, art. 26.

termined). For those uses and subsequent processing that are carried out outside the tools, the entities are considered as separate controllers.

Joint controllers determine in a transparent manner their respective responsibilities for compliance with the obligations under the GDPR, more precisely their responsibilities *vis-à-vis* the data subjects' rights and information duties. Such a determination takes the legal form of an arrangement among the joint controllers, usually a binding document such as a contract or a binding act under the EU or Member State law to which the controllers are subject[61]. The Joint controllers agreement: a) regulates the mutual relations between the Parties as regards the joint control of personal data; b) defines the relations with the data subjects.

Within the context of LLs another relevant issue dealing with the handling of personal data is the transfer to third countries. When personal data are transferred outside EU, special safeguards are ensured and the GDPR reserves provisions concerning cross-border data flows and privacy protections to transfer data to third countries[62].

a) Adequacy decision: Pursuant to GDPR Article 45, the EU Commission assesses the adequacy of the level of protection in the third country by taking into account the rule of law, respect for human rights and fundamental freedoms, the existence of effective functioning of one or more independent supervisory authorities, the international commitments or obligations arising from legally binding conventions or instruments and participation in multilateral or regional systems in relation to the protection of personal data[63].
b) Contractual clauses: model contractual clauses (standard contractual clauses) pre-approved by the EU Commission ensure appropriate data protection safeguards[64].

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[61] EDPB, Guidelines 07/2020 on the concepts of controller and processor in the GDPR, Version 1.0. Adopted on 02 September 2020.

[62] GDPR, artt. 45-46.

[63] *Ibidem*, art. 45 (2).

[64] Lastely updated on 4 June 2021. See *commission.europa.eu/law/law-topic/data-protection/international-dimension-data-protection/standard-contractual-clauses-scc_en*.

c) Binding corporate rules: data protection policies adhered to by companies established in EU and including general data protection principles and enforceable rights when data are transferred outside the EU[65].

7. — *LLs and contractual issues.*

As mentioned in the previous paragraphs, LLs establish a durable collaboration between several actors (public and private legal entities) aimed at creating an environment of co-creation to foster innovation and sharing of knowledge resulting from that collaboration. On the base of those features of LLs and for the development of the Livingagro, it has been necessary to identify the legal approach to regulate the mutual relationships within the LLs.

From the contractual viewpoint, the question is not so obvious. According to traditional civil law, contracts are the main legal instruments used to enable the circulation of the patrimonial elements (rights *in rem* and obligations) from one subject to another[66] (see for example the Article 1101 of the French *Code Civil; the Article 1321* of the Italian *Codice Civile*; the Article 1254 of the Spanish *Código Civil*).

Whatever the national law, the discipline of the contract is based on the 'exchange' concept.

Sacco argues that within all legal systems, it is possible to observe a sort of 'dogma of bilateralism'[67] in contract law, that corresponds to a philosophical idea of justice[68].

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[65] Article 29 Working Party adopted dedicated documents to describe the procedure of approval and requirements of binding corporate rules. See *commission.europa.eu/law/law-topic/data-protection/international-dimension-data-protection/binding-corporate-rules-bcr_en*.

[66] S. Caprioli, *Il Codice civile. Struttura e vicende*, Milano, 2008; J.L. Halperin, *L'impossible code civil*, Presses universitaires de France, Paris, 1992.

[67] R. Sacco, *Introduzione al diritto comparato*, in Id. (coord.), *Trattato di diritto comparato*, 5ª ed., 2006, p. 75 ss.

[68] For an analysis of the concept of contractual justice, see A. Sassi, *Equità e interessi fondamentali nel diritto privato*, Roma-Perugia, rist. 2011, p. 19 ss.

From the viewpoint of the Italian and French Civil Codes, the exchange is conceived of as the mutual interdependence of the performances (the '*corrispettività*' for the Italian *Codice Civile*)[69] or the obligations (the '*bilateralité*' or '*synalagmaticité*' within the *Code Civil*).

In other European legislations, the hints at the concepts regulating the exchange may be different[70] (see within the German BGB, the *Gegenseitiger Vertrag,* 'the reciprocal contract' and under the common law, in which the concept itself of 'contract' is inseparably linked to the concept of exchange (*bargain*)[71]).

Almost all European Civil Codes do not consider the hypothesis that the contracts may refer to relations, not of exchange but of collaboration.

In practice, only the Italian Civil Code specifically regulates some aspects of contracts characterised by the plurality of the parties and by their common purpose (the so-called '*contratti plurisoggettivi con comunione di scopo*').

As legal scholars have pointed out, the category of contracts identified by the Italian Civil Code of 1942 differs from the 'contratti con prestazioni corrispettive', but it provides that the performances of the parties are arranged in parallel[72]. Those contracts do not meet antagonistic interests,

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[69] See, among others: F. Galgano, *Il negozio giuridico*, in *Tratt. dir. civ. comm.* directed by Cicu and Messineo, Milano, 1988, p. 465 ss.; F. Messineo, *Dottrina generale del contratto*, Milano, 1948, p. 234. See, also, the Report of the Ministry of Justice on the *Codice Civile*, para. no. 660.

[70] About the concept of 'corrispettività' and its differences with other concepts concerning the exchange within the European legislation, see, in particular, A. Pino, *Il contratto con prestazioni corrispettive*, Padova, 1963, *passim.*

[71] Cfr. G. Alpa, *Il contratto tra passato e avvenire*, introduction to G. Gilmore, *La morte del contratto*, transl. to the Italian of *The Death of Contract*, Milano, 1988, p. XIX ss.; C.G. Cheshire, C.H. Fifoot, M.P. Furmston, *Law of Contract*, XII ed., London, Dublin, Edinburgh, 1991, p. 71 ss.; see, also, the definition of '*gift*' within W. Blackstone, W. Morrison, *Blackstone's Commentaries on the Laws of England: In Four Volumes*, Routledge Cavendish, 2001, p. 438 s.: «The English law does not consider a gift, strictly speaking, in the light of a contract, because it is voluntary, and without consideration; whereas a contract is defined to be an agreement upon sufficient consideration to do or not to do a particular thing».

[72] G. Ferri, *Contratto plurilaterale*, in *Noviss. Dig. it.*, IV, Torino, 1968, p. 680; F. Messineo, *Contratto plurilaterale e contratto associativo*, cit., p. 147.

but rather the common interest of the parties by establishing a common goal[73], a common organisation of the interests[74], common activities[75], the uniqueness of the legal outcomes[76], and common benefits to the parties[77].

The Italian Civil Code of 1942 deals with the nullity and termination (see Articles 1420, 1446, 1459 and 1466 Italian Civil Code) of contracts with a common purpose.

According to the *Codice Civile*, the existence of a common purpose affirms the principle that in every case of pathology, there is the participation of a party, and this situation should not imply the termination of the entire contract, with the exception of cases in which the participation of a party is essential to reach the aims of the agreement.

This concept is in contrast with the approach to exchange contracts, according to which, if a party does not comply with the duties arising from the agreement (as a result of breach, *force majeure* or hardship), the other party normally does not yet have the interest to provide its performance. The exchange provided by the contract will be substituted by termination of the contract and indemnification.

In the case of contracts with a common purpose (to carry out an economic activity, to build a work, to realise research, etc.), the fact that a party does not comply with its obligation may not lead to the loss of the interests of the other parties, in particular, when there are more than two parties to the contract.

Not all jurists agree with the introduction of this category of contracts, which seems to breach the synallagmatic paradigm. According to an im-

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[73] F. Messineo, *Contratto plurilaterale e contratto associativo*, loc. cit.

[74] T. Ascarelli, *Il contratto plurilaterale*, in Id., *Studi in tema di contratti*, Milano, 1952, p. 115; V. Salandra, *Il contratto plurilaterale e la società di due soci*, in *Riv. trim. dir. e proc. civ.*, 1949, p. 842.

[75] G. Ferri, *La società di due soci*, in *Riv. trim. dir. e proc. civ.*, 1952, p. 613.

[76] G.G. Auletta, *La comunanza di scopo e la causa del contratto di società*, in *Riv. dir. civ.,* 1937, p. 150 ss.

[77] A. Belvedere, *La categoria contrattuale di cui agli artt. 1420, 1446, 1459, 1466 c.c.*, in *Riv. trim. dir. e proc. civ.*, 1971, p. 660 ss.

portant Italian scholar, Francesco Messineo, the choice of the legislator to establish some provisions concerning such a category of agreements had to have been considered as odd[78].

Within other European law, contracts with a common purpose are not regulated in a general category but are only taken into consideration with respect to some specific problems or in connection with a few typologies.

For example, the German law regulates associations, such as the *Gesellschaftsvertrags* (civil law companies, GbR), set out in paragraphs 705 et seq. as well as other contracts establishing companies.

In French law, in addition to companies, different types of association agreements are regulated, especially in the administrative sector. This is the case of a contractual instrument in order to grant the cross-border cooperation provided by the *Code général des collectivités territoriales* (CGCT)[79].

Within English law, alongside the praxis of 'Contractual Joint Venture', the law regulates legal entities without limited liability of the parties (see the Partnership Act of 1890) or with limited liability (see the Limited Partnership Act of 2008).

European Union Law follows the traditional approach when it refers to contracts. For example, the legal sources concerning public contracts and the VAT refer to contracts as instruments for the exchange between the parties.

Case law and administrative practice often refer to the fact that in order to implement the discipline of the public contract, a 'direct counter-performance' ('*controprestazione diretta*'; '*contraprestación directa*'; '*contrepartie direct*')[80]

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[78] See F. Messineo, *Il negozio giuridico plurilaterale*, Milano, 1927; Id., voce *Contratto plurilaterale e contratto associativo*, in *Enc. dir.*, X, Milano, 1962, p. 139 ss.

[79] Cfr. P. Janin, *Le statut et le régime juridique des organismes de coopération transfrontalière en droit français*, in Comte, Levrat (edit by), *Aux coutures de l'Europe. Défis et enjeux juridiques de la coopération transfrontalière*, Paris, 2006, p. 251 ff.

[80] See, in France, the Conseil d'État, 6 luglio 1990, *Comité pour le développement industriel et agricole du Choletais* – CODIAC, in *D.F.* 11 May 1991, p. 573, observations by M. Arrighi De Casanova, p. 497 ff. For the administrative practice, see the document drawn up by CNRS (Centre National de la Recherche Scientifique) del 1 December 1999 '*Instruction de procédure no 990310BPC définissant les modalités et les circuits d'attribution des subventions, les principales règles*

must be put in place. Similarly, EU case law on the VAT refers to a 'direct link' between the performances of the parties[81].

In many cases, EU legal sources do not take into consideration in a satisfactory manner the special aspects of contracts with a common purpose and with a plurality of the parties. Important instruments of EU law, such as Regulation no. 593/2008 concerning the law applicable to contractual obligations and Regulation no. 44/2001 on judicial competence, do not consider such contracts.

However, contrary to domestic laws, which consider contracts without an exchange as a marginal phenomenon, EU law highlights the role of contracts in establishing collaboration between the parties.

In particular, EU legal documents make several references to agreements establishing collaboration between legal entities, such as universities, undertakings, public bodies and other entities for research initiatives, education and training.

The European documents take into consideration several typologies of agreement establishing the collaboration between the parties.

These agreements are referred to with different names: Grant Agreement[82]; Consortium Agreements (see, for example, Article 7 of the General Grant Agreement adopted by the European Commission for the period 2021-2027); grouping of economic operators which submit tenders under public contracts (Article 19, paragraph 2, Directive 24/2014/EU),

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de gestion et les documents types applicables', paragraph 1.1. See Annex 1 (*La notion de contropartie pour la livraison de biens et le prestations de services*) del documento del CNRS, Secrétariat Général Direction des finances, *Le régime fiscal du CNRS en matière de TVA*.

[81] Court of Justice, judg. 5 February 1981, 154/80, *Cooeperatieve Aardappelenbewaarplaats*, ECLI:EU:C:1981:38.

[82] According to the Article 180, para. 1, Regulation (EU, Euratom) 2018/1046 of the European Parliament and of the Council of 18 July 2018 on the financial rules applicable to the general budget of the Union, the "grant" implies a contribution to fund an action intended to help achieve a Union policy objective; or the functioning of a body which pursues an aim of general Union interest.

clusters and other 'business networks'[83], joint research units[84] and so on.

In addition, and this is particularly interesting to the discourse at issue, EU legal sources distinguish 'contractual research' as research that is carried out through service contracts and 'collaborative research' as research that arises from the collaboration between universities, research organisations and enterprises[85].

The collaborative research is «one of the most important knowledge transfer and innovation processes. There is now wide consensus among experts from Universities, Research Technology Organisations (RTOs) and Industry that this process can be beneficial to the respective missions and interests of all parties, provided that certain principles and good practices are observed» (Voluntary guidelines for universities and other research institutions to improve their links with industry across Europe, paragraph 1)[86].

The collaborative research is that in which «all parties carry out R&D tasks» (see the Annex I to Recommendation on the management of intellectual property), carrying out an effective collaboration.

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[83] The cluster can be defined as 'a group of firms, related economic actors, and institutions that are located next to each other and have reached a sufficient scale to develop specialized expertise, services, resources, suppliers and skills' (Commission, Towards world-class clusters in the European Union: Implementing the broad-based innovation strategy, 17 October 2008, COM(2008) 652; see the document enclosed, The concept of clusters and cluster policies and their role for competitiveness and innovation: Main statistical results and lessons learned); European Cluster Memorandum of January 2008 on www.proinno-europe.eu.

[84] The Joint Research Unit, which is provided under the documents of the Framework Programme 'Horizon 2020', refers to the French experience of the *Unité Mixte de Recherche* (UMR; Article 2 Décret n° 82-993, 24 November 1982, and the Decision n° 920520SOSI, 24-7- 1992) relating to the '*organisation et fonctionnement des structures opérationnelles de recherche*'.

[85] See, for example, the Communication of the European Commission, Improving knowledge transfer between research institutions and industry across Europe: embracing open innovation – Implementing the Lisbon agenda, COM(2007) 182 final, of 4 April 2007; Annex I to Recommendation on the management of intellectual property; Management of intellectual property in publicly-funded research organisations: Towards European Guidelines, paragraph 4.2.

[86] On the collaborative research, especially from the contractual viewpoint, see R. Cippitani, *I contratti con comunione di scopo*, Torino, 2020.

According to the Framework for State aid for research and development and innovation, para. 1.3, subparagraph 16, let. h): "effective collaboration" means «collaboration between at least two independent parties to exchange knowledge or technology, or to achieve a common objective based on the division of labour where the parties jointly define the scope of the collaborative project, contribute to its implementation and share its risks, as well as its results. One or several parties may bear the full costs of the project and thus relieve other parties of its financial risks». The "Contract research" and provision of research services are not considered forms of collaboration.

In a collaborative research project «ownership of the foreground should stay with the party that has generated it, but can be allocated to the different parties on the basis of a contractual agreement concluded in advance, adequately reflecting the parties' respective interests, tasks and financial or other contributions to the project» (see Annex I to Recommendation on the management of intellectual property, paragraph 17).

In this case, «Research institutions and their staff are expected (and often obliged) to publish the results of research projects, even where the project in question is financed with private funds. It is therefore important that they explicitly reserve the right to publish whenever possible. In collaborative research, all contracting parties should be given the opportunity to comment on manuscripts, without having a controlling influence on the final version of a manuscript, the other contracting party should have a defined timeline (e.g. 30 days) in which to comment or decide whether potential inventions should be the subject of a patent (or other IP right) application» (see Voluntary guidelines for universities and other research institutions to improve their links with industry across Europe, para. 3.2.5).

8. — *Application of the collaborative agreements scheme to the LLs.*

LLs can be considered as a form of collaborative agreements in research and innovation activities provided by the EU documents.

However, the fact that the LLs can be qualified as collaborative agree-

ments does not imply the application of a general discipline which is not foreseen under the EU law.

Nevertheless, from the documents of the European Commission and from the praxis in fields such as the management of the EU Programmes (in particular in the case of General Model Grant Agreement and of the Consortium Agreements) it is possible to identify the solutions applicable also to the case of the agreements establishing a LLs.

As previously mentioned, such perspectives are only referred to in situations of pathology of the agreement, such as the breach or *force majeure* (as in the case of the Italian Civil Code) or in the case of the partial nullity of the contract.

The matter of pathology is kept in mind by the EU documents but with a larger approach than the more traditional one.

For example, according to the General Model Grant Agreement for the EU Programmes, the contract with the Commission and beneficiaries may be partially terminated with respect to one or more parties (see, in particular, Article 32 General Model Grant Agreement) on the ground of a relevant breach or by *force majeure*. In an analogous manner with the Italian Civil Code, the partial termination will not lead to the end of the Grant Agreement as a whole, but only if the participation of the defaulting parties can be considered as not essential in order to achieve the objectives of the agreement.

Other important aspects have to be considered that are not normally regulated by national legislatures. As a matter of fact, EU documents point out the need for collaborative agreements to establish rules concerning the governance within the consortium, intellectual and property rights, the decision-making process, allocation of resources, liability, the settlement of disputes, the signature process, and so on (see for example Article 7 of General Model Grant Agreement).

Due to the fact that the national legislations do not regulate directly many aspects of the collaborative agreements, agreements concerning LLs should be drown-up taking into consideration the experience arising from the participation in the EU programmes, and in particular that concerning the con-

sortium agreements[87]. For example, in order to point out that the parties are realising an effective collaboration, the relevant clauses shall specify what the research activity that the parties undertake to share consists of (where appropriate, also by reference to a specific technical annex), with express reference to the following aspects objectives of the collaborative research; detailed description of the work phases of the project, with the relevant deadlines for periodic and final deliveries, possibly reporting the timelines in a Gantt chart to aid the monitoring of the progress of the work; method of division of the project tasks between the parties; precise indication of the instrumental and human resources, including scientific managers, involved by the parties for the collaboration; list of the backgrounds of the parties useful for the collaborative research, as identified by the researchers and technicians of the parties who will actively, according to their respective roles, contribute to the project.

In addition, due to the fact that the LL establishes a long term collaboration, the parties will have the need to adapt the action technically and to take any other important decision that may arise from the evolution of the activity and the context. This also to comply with the Article 7 of the Model Grant Agreement requesting that the internal arrangements deal with the 'internal organisation of the consortium'.

In the practice, the consortium agreement, as other collaborative agreement (e.g. joint ventures, network of enterprises, etc.) require that such decisions are taken by 'bodies' (which are called 'commitee', 'assembley', 'boards'), including representatives of beneficiaries or external experts. These bodies have decision-making power, or, especially if they are composed of experts, an advisory function in areas such as ownership of results or ethics.

The decisions taken by such bodies has the effect to integrate, implement or to change the contents of the agreements. The agreement specifies how these bodies are composed, who chairs them, and how decisions are taken.

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[87] See also the template «DESCA» (Development of a Simplified Consortium Agreement, in *www.desca-agreement.eu/desca-model-consortium-agreement/*) elaborated by a European of universities and public centers of research.

In any case, the decisions can be taken by majorities which may vary depending on the subject.

Other example of topics to be regulated in the collaborative agreements in very specific manner is the eventual flow of money from a party to the other ones. Collaborative research agreements, as seen, does not provide for the payment of a fee, neither to the research organisation, which often uses third-party funding, nor to the private party. In the collaborative situation envisaged, the parties place themselves in an equal position of sharing the costs necessary to achieve the common research objectives. To this end, if the resources made available by the parties in kind for the joint execution of the project, as set forth in the technical annex, are equivalent, the contract may provide that each party bears its own costs. If, on the other hand, it is necessary to rebalance the financial plan of the collaboration, the contract may provide for the company to partially reimburse the expenses incurred in the execution of the project. Such reimbursements may also be deferred over time during the project phases or linked to the conclusion of certain intermediate project phases. Nonetheless, again in order to exclude any form of remuneration in favour of either party to the contract, it will be necessary to provide a precise and exhaustive account of the actual expenses incurred, accompanied by the appropriate supporting documents.

Among other issues subject the regulation of the collaborative agreements are the discipline of the results.

As to the allocation of rights over the results of the research, as stated above, the choice is left to the autonomy of the parties, who are therefore free to regulate this aspect as they see fit. Nonetheless, it has been observed in practice that, given the equal position of the parties, there is usually a linear division of the intellectual property rights inherent in the research project, recognising the individual contribution of the parties in the project and, at the same time, enhancing the collaboration as a means of establishing a lasting technology transfer relationship between the parties.

Other provisions have to be elaborated considering the features of the collaborative agreements and their differences with the contracts establishing the exchanges between the parties (such as the service contracts).

9. — *Conclusions.*

In conclusion, all the above explained legal aspect related to LLs need to be deeply studied for every new LL, as it needs the privacy issues related to the participation of the users in the process, due to the lack of legislation and the presence of few numbers of trans-national and international Living Laboratories.

LLs seem to require hybrid regulatory settings combining technologically advanced tools, smart designing schemes and legal requirements ensuring protection of both IPRs and privacy.

Based on the experience gained in the Livingagro project, it can be asserted that, among all the contractual and legal issues that emerged, including those related to privacy and intellectual property, there are no particular challenges that differ significantly from those encountered in other sectors requiring internal regulations between similar parties, with one exception. Accordingly, it is possible to affirm, generalising, that the legal challenges faced in terms of contracts, privacy, and intellectual property within the Living Labs are not substantially different from those encountered in other domains, emphasizing the need for appropriate regulations and agreements to facilitate smooth collaboration and protect the interests of all parties involved.

The referred exception pertains to the role of legal language and contracts themselves. Whenever the need arose to draft, share, and sign a formal document containing rights and obligations, such as a contract or privacy policy, issues surfaced that are already familiar to legal professionals collaborating with researchers and scientists but amplified in this context. In fact, the formality associated with legal documentation is often perceived by these ones as a burden and a constraint on scientific activities. In Living Labs, this problem is compounded by the inclusion of stakeholders, associations and final users who require a language that is more accessible and less technical than what is typically used in the drafting of legally effective documents.

Consequently, it can be observed that this question currently lacks a definitive answer, as it prompts the legal academic community to contemplate

how new technologies on one hand and new participatory tools on the other hand pose a challenge to legal professionals when drafting legal documents related to participatory instruments such as Living Labs. The main question is to decide whether to maintain an overly formal and cryptic language or to embrace a more inclusive approach that facilitates better understanding for the specific participants involved in the Living Labs. This would enable a clearer definition of the legal aspects that arise and require internal agreement among the participants.

By adopting such an approach, the participation of a greater number of interested parties would be encouraged, effectively promoting the openness advocated by the Lisbon Strategy. However, further deliberation and collaboration within the legal community are necessary to address this complex issue and strike an appropriate balance between legal precision and participant comprehension in the context of Living Labs.