



Ambient Assisted Living Service Conception in Nursing Homes: From Reinforced Aging in Place Services Towards Smart Digital Coordination Platform

Juliette Reerink-Boulanger^{1,2}(✉), Rémi Locquet¹, Caroline Ric¹, and Alain Somat²

¹ Hospitalité Saint Thomas de Villeneuve, Direction Innovation Recherche et Formation,
29 rue Charles Cartel, 22400 Lamballe, France

{Juliette.Boulanger, Remi.Locquet, Caroline.Ric}@HSTV.fr

² LP3C - EA1285 - Laboratoire de Psychologie : Cognition, Comportement, Communication,
Université Rennes 2, Rennes, France

{Juliette.Reerink-Boulanger, Alain.Somat}@univ-rennes2.fr

Abstract. This article presents the ethical and responsive governance process designed by the Hospitalité Saint Thomas de Villeneuve to address aging in place services, care and needed support. We will first describe the genesis of a supportive community living services organization and its technical translation into Smart Digital Health Coordination Platform. Secondly, we will highlight the Living Lab methodological approach to support change. Finally, the results section will describe change evaluation program engaged and future work perspectives.

Keywords: Aging in place · nursing homes · living lab · change

1 Introduction

By 2030, the increase of healthcare expenditure related to the baby-boomer generation will worsen as the European population grows older. It is therefore urgent to prevent frailty risks and deliver health and social supportive services to address elderly complex care situations at home.

On the one hand, the proportion of people over 65 years increases rapidly, and European society is challenged to prevent decline of functional capacity by addressing user's needs at home with appropriate and optimal health service packages. On the other hand, loneliness, geographical isolation and vulnerability, three social determinants, are also known to impact mortality, morbidity and health care system use [1, 2]. Health and social determinants thus need to be addressed together for better aging in place situations.

Innovative social and medical coordinated care solutions are therefore required to prevent complex situations that lead to institutionalization and nursing homes. This is the primary goal of the “Reinforced Aging In Place Services” project, EAIPS, namely “*Dispositifs Renforcés d'Accompagnement à Domicile (DRAD)* in France, a French

experimentation financed project since 2018 [3]. Due to its organizational major ambition, EAIPS-DRAD project is already generalized and integrated into the French code of social action and families. It is currently named “Territorial Resources Centre for Nursing Homes” (*Centre de Ressources Territoriales G erontologiques*) in the French administrative system. Patients benefit, efficiency and medico-economic evaluation are three major criteria currently being evaluated in the EAIPS-DRAD project by the DGCS (Social Cohesion and Solidarity Public Policies General Direction).

The aim of this paper focuses on how living lab methodological approaches support care activities change in nursing homes. Consequently, this study will try to analyze the various acceptance determinants of a smart digital coordination platform designed to reinforce aging in place services.

1.1 From Nursing Homes to Reinforced Aging in Place Services – Dispositifs Renforc es d’ACCompagnement   Domicile

Aging in place is a major public health issue with medical, economic and social impacts. In France, social and medico-social housing facilities are facing an unprecedented crisis that legitimates a careful consideration of this model. Indeed, industrial processes applied to human care, degradation of working conditions [4], numerous adjustments that have been made to cope with covid pandemic situations, their effects and organizational impacts are so many crisis indicators and urge for a deep and sustainable model change [5].

A variety of aging in place solutions currently exist, some are called intermediate forms of residential provision [6], with varied types of residential, community and supportive services [7, 8]. This term defines a new type of housing which is closer to the home than to the social and medical/social sector. EAIPS-DRAD system can be considered as a bridge between home and institution, especially regarding of two organizational characteristics: its organization “outside the walls” [9] and its provision of assisted technological services [10].

The choice made by HSTV is to provide an “outside the walls solution”, a form of nomadic services brought from inside the nursing home to outside elderly accommodations [11]. It represents a multidimensional and multi-professional expertise based on different actors (gerontologist, nurses, caregivers of the nursing home) who take into account the patient’s desire to remain at home. Additionally, Reinforced Aging In Place Services/DRAD are completed by sensors and applications that are likely to slow down loneliness and/or possible depression [12]. The aim of this system is to anticipate the changing needs of elderly people aging in place, within a structured and coordinated local community living service (medico-social and health services).

1.2 Reinforced Aging in Place Services (EAIPS-DRAD)

As we get older, health and care needs are not likely to stay progressive and continuous. Therefore, RAIPS/DRAD experiments an organizational system whose mission is to offer an alternative to admission in nursing homes for the elderly with who might have functional or cognitive incapacities but would rather stay home. As a matter of a fact, one of the HSTV non-profit organization’s nursing homes observed in 2016 that it was

no longer possible to fulfill the growing needs of the nearby population: more than 300 elderly people were on the waiting list. A survey conducted the same year among its residents showed that none of them would have chosen the nursing home if they could have stayed at home. The idea of a “nursing home outside the walls” service was developed and co-designed with staff and families. It has been experimented since 2018 within 5 institutional home care of HSTV group, and based on three principles:

1. a complementary approach towards existing community living services: the focus is to integrate and strengthen the various coordination levels among professionals working for the elderly.
2. a mobile team that responds to the elderly people’s safety needs: gerontologist experts in complementarity with other actors such as gerontology care assistant, occupational therapist, psychologist;
3. a 7 days a week and 24 h a day accessible alert system: securing the home through the use of smart sensors and the nursing homes professionals in case of emergency.

These efforts to promote new types of living spaces for older people are not new but to date, there was no coordinated and evaluated deployment in France. Today, nearly 150 people benefit from RAIPS/DRAD services within 5 nursing facilities.

From now on, because this experimental phase has been positively evaluated, this plan can officially provide aging in place preventive support inside the walls of the nursing home. These are the new missions called “Territorial Resources Centre for Nursing Homes” (*Centre de Ressources Territoriaux Gérontologiques*). April 27, 2022 bylaw¹ gives precise specifications for these missions.

1.3 Smart Digital Health and Coordination Platform - PALOMA

Thanks to the non-profit organization executive board and local council of HSTV, Brittany IT Services and IT Consulting (*GCS E-santé*) and the Regional Health Authority (*Agence Régionale de Santé de Bretagne*), the PALOMA smart coordination platform was born. Its goal is to enable people with a loss of independence to stay at home with the help of the nearest Territorial Resources Center (CRT). Placed at the center of the system, the nursing home, is the resource center, in the sense of CRT.

The challenge of developing such a platform is associated with the tremendous changes that health and medico-social nursing homes sector are facing. Their missions are progressively evolving from residential settings to Territorial Resources Centers (CRT) for the elderly populations living nearby. Their aim is to provide responses to the changing needs of frail seniors, primarily by acting preventively and curatively to allow them to stay at home by providing support. Two major issues must thus be addressed in the smart digital platform conception:

- Professional coordination: better communication in order to adapt services to the various and complex care situations.
- Ethical management: use of health data in order to predict frailty aggravation.

¹ Arrêté du 27 avril 2022 relatif à la mission de centre de ressources territorial pour les personnes âgées - Légifrance ([legifrance.gouv.fr](https://www.legifrance.gouv.fr)).

The scope of the PALOMA platform project therefore includes the support and the deployment of CRT by offering a global, interoperable and predictive digital tool (see Fig. 1).

The digital solution has been designed to help elderly people maintain their independence and stay at home by improving the coordination of social, medico-social and health sector players in order to:

- Provide better support for frail seniors, to preserve social and family networks by aggregating a set of existing but dispersed solutions.
- Reduce hospitalizations through the use of sensors and IoT, telehealth, telecare and the use of predictive algorithms and machine learning for trusted and robust decision-making.

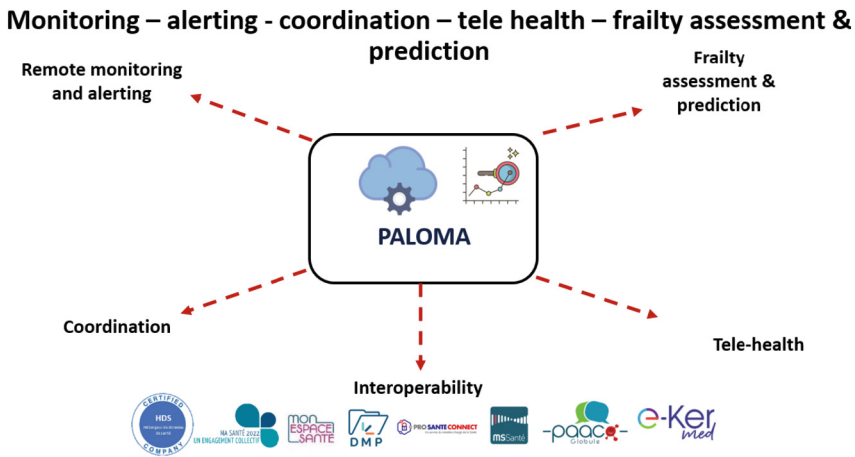


Fig. 1. Smart digital health and coordination platform –PALOMA

Thus, this platform aims at acting on 4 dimensions:

1. Securing the person’s environment
2. Managing complex care situations and provide support for caregivers
3. Enhance coordination and provision of geriatric expertise
4. Quality of the life project, social isolation and loneliness management

PALOMA smart digital health coordination platform aims at providing continuous support from primary signs of frailty in everyday life, complex care management while aging in place (RAIPS/DRAD) and to institutionalized care in nursing homes.

2 Literature Review

PALOMA’s platform development is a strategic priority for the Hôpital Saint-Thomas de Villeneuve non-profit organization. The HSTV’s living lab is in charge of coordinating the development stages, allocating the necessary resources, undergoing the quality-assessment process as well as monitoring the pilot sites deployment. In order to ensure

strategic alignment between technical development and supportive community services, HSTV's ethics committee has been consulted throughout the project. The innovative and methodological approach is developed hereafter.

2.1 The Living Lab Approach Implemented at the Hôpitalité Saint Thomas de Villeneuve

In 2021, a five-year strategic project on user experience, attractiveness and innovation has been launched with HSTV local council approval. To implement, develop, and structure an innovation culture, a living lab project has been launched the same year. It aims at ensuring open innovation policy, attached to the value of the HSTV non-profit organization.

Several definitions of Living-labs co-exist [13]. Forum LLSA² in France, and ENOLL³ in Europe both describe living labs as open innovation ecosystems. In HSTV's living lab, the methodological approach follows the core principle of: "open innovation" carried by the user, "co-creation" and experimentation of the uses of products and services, "multiple stakeholders" and the importance of "real-life environment" with the aim of defining and developing new products, services, public and community systems or new business models [14]. Living labs thus constitute a new research paradigm based on a participatory dimension through collaboration with end users and a mode of innovation described as open.

Considering living labs as potential sources of innovation stimulation [15], a strategic priority project of Living lab has been structured within HSTV in 2021. Firstly, support from the Forum LLSA has been requested in order to design the value creation and the raison of being HSTV's living lab, as well as elaborate its governance, development process and economic model [16]. Secondly, in 2022, a complementary approach has been implemented with the training program provided by the Ensemble Living Lab in Lille Metropolitan area. In a dynamic and learning process, co-designed methodology, animation postures, evaluation, ethical and governance process of the living lab project has been structured. Thirdly, a working and learning expedition during autumn 2022 with the directory and scientific board of the University of Lille has contributed to rely on a definition of living lab activities as "a process of special attention paid to enabling environment in inclusive space" [17].

2.2 The Purpose of HSTV'S Living Lab: Supporting Change Activities in Health and Medico-Social Institutions

The structuration of the HSTV Living Lab activities previously described led to define its raison of being, which is to meet the needs of change management for HSTV's care and medico-social facilities for change support. A value proposition creation has been established to take up to the challenges faced by HSTV's health and medico-social institutions:

² <https://www.forumllsa.org>.

³ <https://www.enoll.org/about-us/>

1. Bring back meaningful co-activity between the worker and the person that benefits from the service to create a dynamic of value creation.
2. Co-design with stakeholders the useful effects of work change: organizational performance, health at work, relationships quality and social cohesion.
3. Measure effects, results and dynamic processes engaged with change as well as their social impact.
4. Capitalize knowledge and lessons learned
5. Disseminate the lessons learned internally and externally

Change in the health and medico-social sector are numerous, and the ambition of the living lab is to go beyond a time-limited project management mindset to contribute to a “performance of use” [18]. This concept relies on centrality of work which leads to the opportunity of value proposition and contributes to achieve performance.

2.3 How Technological Artifact PALOMA Processes Organizational Change?

Firstly, to move from a project management logic to the emergence of performance of use concept, we propose to challenge our activity model change with simple questions [19]:

- The change process: what is the desired outcome from carrying out this change activity?
- The process of technical and economic transformation: by what means are the subjects performing this activity? What kind of performance of use is able to support and achieve these goals ?
- The process of organizational transformation of work: who is responsible for what, when carrying out this activity and how are the roles organized? What kind of work activity divisions and distribution are in tension and need to be discussed?
- The process of cultural transformation: what values, cultural norms, rules or regulations are governing the performance of use?

2.4 Ethical and Responsive Evaluation Program in the Design Process of Smart Health Digital Services for Users

Secondly, to support change requires appraising the effects of a complex situation. Based on Stake’s “Responsive Evaluation” model [20], the evaluation approach associates the experiences of patients and beneficiary and family members for shared decision making, and collective participation. Additionally, the evaluation approach focuses on the educational, learning and empowerment processes rather than the solely measures of effects and outcomes of the change process.

In the HSTV’s living lab, evaluation process was reduced to four steps, including:

1. Key performance indicators monitoring: i.e. the effects and impacts produced
2. Collective skills acquisition (e.g. autonomy level)
3. Organization capacity to learn, adapt and change
4. Environment and organization capacity to allow people to expand their possibilities of action and their degree of control over their task

2.5 Multilevel Acceptance Framework Assessment for Smart Health Digital Services for Users

Thirdly, to support Ambient Assisted Living (AAL) product and service conception, user needs requirements and activity limitations assessment are two crucial components to target independent living. AAL system acceptance requires a micro level of system acceptability combined with a macro acceptability level for innovative practices acceptance [21].

To support change within a complex activity system, an “expansive learning cycle” involving several phases is initiated (cf. Fig. 2) and aims, through co-construction, at elaborating the bases of new practice decision and collective participation.

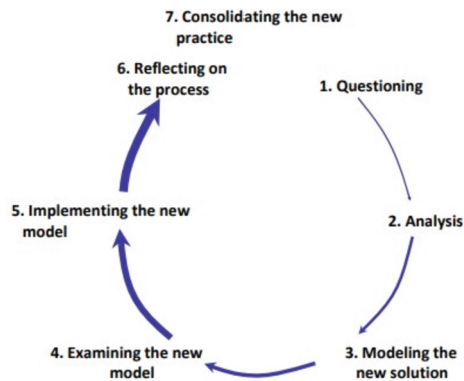


Fig. 2. Sequence of learning steps in a development cycle by expansive learning [22]

3 Living Lab Approach: A Responsive and Ethical Evaluation Program to Co-Crete the Paloma Platform

We built up a responsive ethical program. We proposed to analyze the co-design work of the platform through the prism of these different ethical evaluation stages. Indeed, the Living Lab participants (users and medical and health professionals) questioned the meaning of work activities and service relationship during the design of the smart digital platform. In this paper, our aim is to describe change evaluation program engaged in order to better apprehend organization change. This reflexive approach, led to the identification of a four-stage research-action framework which we propose to describe here:

1. First, the Ethics Committee group referral (step 1)
2. Second, controversies raised by the use of the platform (step 2);
3. Thirdly, digital design conception principles associated with the platform (step 3)
4. And, finally, use case design to engage discussion on digital platform conception principles with the ethical committee (step 4)

3.1 Step 1: Ethics Committee Group Referral

The development of the PALOMA platform raises a certain amount of ethical questions. In 2022, two members of the Living lab, a gerontologist and a Nursing Home Director of HSTV group, wrote down a document to raise these issues. A synthesis of the referral document identified the risks of opposition between HSTV care values and the digital platform (Table 1 below).

Table 1. HSTV care values and risks of opposition summary raised by the digital health and coordination platform –PALOMA

	HSTV care values	Risks of opposition raised by the Platform
1	Inclusion of users	Exclusion through illiteracy?
2	Home care support	Medicalization, surveillance: institutionalization?
3	Aging in place management of complex care situation	Distorted perception of reality?
4	Means' adaptation	Blind and globalized digitalization?
5	Relationship involvement	Dehumanization?
6	Care freedom	Care slavery?

These 6 questions addressed to the HSTV Ethic Committee group aim at providing ethical guidance for smart platform specification development. They particularly points out strategic dimensions such as:

- Outcomes expected from the use of the platform?
- Values, norms and rules of HSTV cultural group compared to the digital platform service production?
- Work division and roles addressed by the digital platform?
- Lessons, knowledge and skills that can be learned and practiced with the digital platform?

3.2 Step 2: Controversies Arising from the Use of the Platform

In order to materialize these ethical questions associated with the use of the PALOMA platform, a collective workshop was organized. Several Living Lab community users contributed to co-design the digital platform controversies: HSTV' representative (health professionals, doctors, UX designer, innovation manager, nursing home director, information system director), Aract Bretagne Association (work condition non-profit organization), France Asso Santé Association (patient non-profit organization), and Telegrafik (smart digital platform software company associated in the Paloma development). Workshop objectives were to collectively debate on digital and Artificial Intelligence health

service design principles conception for healthy aging. The controversies were designed based on the ethical principles of medical, care and digital Artificial Intelligence (AI) project conception design⁴:

The workshop was held during the Brittany regional conference on Ethics and Artificial Intelligence in Health organized by the Ministerial Delegation for eHealth (DNS) and Regional Health Authority (*Agence Régionale de Santé de Bretagne*) on December 8, 2022. An invitation workshop based on “Digital data use in health to support healthy aging” was launched.

50 people took part in the workshop (12 men and 38 women): 26 caregiver students, 24 health professionals or user representatives. All of them had a previous hour conference on AI concepts in Health provided by Ministerial Delegation for eHealth.

The controversies used during the workshop were:

- “IA is big brother anywhere and anytime at home”
- “IA favors human relationships”
- “IA improves working conditions and quality support for elderly disabled”
- “IA is a matter of experts”
- “IA favors energy sobriety”
- “Aging in place service support will be better if IA collects all health data”.

3.3 Step 3: Ethical Shared Principles Synthesis During Collective Participation on the Debate of Smart Digital Platform Conception

During the workshop, a facilitator welcomed the participants and invited them over a period of one hour, to discuss the controversial issues. As an introduction, a short brief on the technical aspects of the platform (predictive algorithms of frailty risks signals) was provided. The objective of a collective debate on ethical issues, work impact, quality of care with IA use was explained. According to the concept of “moving debate”, participants had to occupy the workshop space according to their opinion: the “agree” on one side of the room, the “disagree” on the other. They were then invited to express out loudly, as many arguments as possible and to switch camps if they agreed with the argument expressed.

Each argument, from one side or the other, was stated successively, trying to rally the opposite side. The arguments exchanged were successively noted on post-it notes by a co-facilitator on a paper-board: the arguments that led to agreement were noted in blue whereas the arguments that led to disagreement in green.

During the workshop, the ethical design principles, as defined by the DNS in the “ethic by design guide”, were explained. A categorization was then realized: the post-it notes were grouped in respect of the ethical principles guidelines. Eight ethical principles for the digital platform conception were identified:

1. Enabling discussion: shared decision making and collective participation for the platform conception
2. Consent: informed consent as preliminary use of the platform
3. Human guarantee: humanized relation and personal link in all relations with the platform

⁴ [Ethic_By_Design_Guide_VF \(esante.gouv.fr\)](https://www.esante.gouv.fr/ethic-by-design-guide).

4. Usability: easy to use and accessible platform
5. Value: non-commercial purpose and energy sparing culture to be developed
6. Quality of support: working conditions and care quality support conditions to be integrated to address complex care situations,
7. Respect of privacy: a platform that sets limits to the collection of health data.

3.4 Step 4: Use Case Design to Engage Discussion with the Ethical Committee

In order to get a concrete representation of the potential risks of the smart digital platform, 4 use cases have been designed. They consist of 4 different potential types of data use by 4 types of elderly and professional personas (i.e. fictional character). Each of them has been designed with the help of healthcare professionals (1 gerontologist, 2 nurse coordinators in the RAIPS Project, 1 nurse coordinator in a nursing home). To perform the data use case design, several criteria have been described:

- The persona story and way of life (personal characteristics, assistance plan, past medical history)
- The inclusion in the smart digital platform (context of the persona data use)
- The organizational activity of the digital platform simulation (what is happening? Who is responsible for what, when does the situation occur, and how are the roles organized? What is the platform doing and what kind of results does it provides? How does the professional in charge take care of the situation?)
- Worst case scenario: simulation of what the worst could happen?
- Ethical issues: what are the care values, rules or regulations at stake?

These smart digital health use-cases were presented at HSTV Ethic Committee group on May 24, 2023. They intended to provide ethical discussion, guidelines and specifications of Paloma's platform data use with a user-centric perspective. They also address future possible work conditions and quality of care impacts. Finally, these platform data use cases highlight the responsibility and governance processes that HSTV non-profit organization needs to develop.

4 Conclusion

A smart digital platform conception is not limited to technical infrastructure construction. As HSTV chose to develop its own organizational settings for aging in place, the nonprofit organization is being challenged with the implementation of a living lab approach to address ethical issues that digital community service conception raises.

This papers tried to examine the impact of a technological artefact on the professional activity changes associated with the conception of a smart digital and coordination platform named PALOMA. Involving professionals stakeholders to decision making process and digital co-conception is still a hard work to do because it implies to put in the spotlight new work identities, different nature of professional relations, ways of managing information, new values and norms elaboration, responsibility and missions.

Further work will integrate methodological material (description of use-cases and personas) and results data (ethics committee specifications; work activity scenario simulations, governance mechanism identification). Measurement of sustainable work conditions, quality of life, professional and environmental empowerment will be the our next

step to evaluate if those determinants can be achieved within the smart digital health and coordination platform.

Acknowledgments. The research was supported by the Brittany IT Services and IT Consulting (*GCS E-santé*) and the Regional Health Authority (Agence Régionale de Santé de Bretagne). The authors would like to thank Lise Delcourt, ARACT work organization engineer who helped designing the workshop. The authors would also like to thank the various HSTV's living lab community members, Gérard le Goff, Lionel Jan, Martin Favre, Jean-Bernard Gauvin, Carole Zisa-Garat for helpful discussion on the smart digital health coordination platform conception evaluation.

References

1. Holt-Lunstad, J., Smith, T.B., Baker, M., Harris, T., Stephenson, D.: Loneliness and social isolation as risk factors for mortality : a meta-analytic review. *Perspect. Psychol. Sci.* **10**, 227–237 (2015)
2. Andrew, M.K., Mitnitski, A.B., Rockwood, K.: Social vulnerability, frailty and mortality in elderly people. *PLoS ONE* **3**, e2232 (2008)
3. Defebvre, M.M.: Le virage ambulatoire dans le secteur des soins aux personnes âgées. *ADSP* **118**, 4–46 (2022)
4. Routelous, C., Ruiller, C., Urasadettan, J., Burellier, F., Lux, G.: Soutenir le pouvoir d’agir en faveur de la santé et de la qualité de vie au travail en EHPAD : étude de deux communautés de pratiques. *RIMHE : Revue Interdisciplinaire Management, Homme & Entreprise* **49**(11), 3–26 (2022)
5. Laplaud, A.: Soigner l’image de l’EHPAD pour soigner les ressources territoriales et l’innovation sociale en gérontologie. *Trayectorias Humanas Trascontinentales* **14**, 57–88 (2022)
6. Djellal, F., Gallouj, F.: Innovation in care services for the elderly. *Serv. Ind. J.* **26**, 303–327 (2006)
7. Moos, R.H., Lemke, S.: Assessing the physical and architectural features of sheltered care settings. *J. Gerontol.* **35**, 571–583 (1980)
8. Moos, R.H., Lemke, S.: *Group Residences for Older Adults: Physical Features, Policies, and Social Climate*. Oxford University Press, New York (1994)
9. Braverman, L., Dufour-Kippelen, S., Fermon, B.: Un dispositif Ehpac « hors les murs »: L’utilisation par ses bénéficiaires. *Gérontologie et société* **43**, 263–277 (2021)
10. Budweg, S., Lewkowicz, M., Müller, C., Schering, S.: Fostering Social Interaction in AAL: methodological reflections on the coupling of real household Living Lab and SmartHome approaches. *I-Com.* **11**, 30–35 (2012)
11. Reerink, J., Mokhtari, M., Biard, N.: User needs and usages of assistive technologies. In: Pruski, A., Knops, H. (eds), *Assistive Technology: From Virtuality to reality*. IOS Press, pp. 150–157 (2005)
12. Braverman, L.: Les dispositifs renforcés de soutien à domicile : quels apports à la lutte contre l’isolement ?. *Fondation Croix-Rouge française, Les Papiers de la Fondation* **39** (2022)
13. Vervoort, K., Konstantinidis, E., Santonen, T., Petsani, D., Servais, D.: Harmonizing the evaluation of living labs: A standardized evaluation framework. In: XXXIII ISPIIM Innovative Conference. *Innovating in a digital world*, Copenhagen, Denmark (2022)

14. Hossain, M., Leminen, S., Westerlund, M.: A systematic review of living lab literature. *J. Clean. Prod.* **213**, 976–988 (2019)
15. Agogu , M., Comtet, G., Menudet, J., Picard, R., Le Masson, P.: Managing innovative design within the health ecosystem: the living lab as an architect of the unknown. *Manage. Avenir Sant .* **1**, 17–32 (2013)
16. Picard, R.: *Co-design in Living Labs for Healthcare and Independent Living : Concepts, Methods and Tools*. Wiley, Hoboken (2017)
17. Routier, C., d’Arripe, A., Soyez, S.: Retour d’exp rience sur une d marche de coconception. *Annales des Mines - R alit s industrielles.* **2**, 6–9 (2017)
18. Hubault, F., De Gasparo, S., Du Tertre, C.: Sustainable development, arguments for an immaterial ergonomics. In: Bagnara, S., Tartaglia, R., Albolino, S., Alexander, T., Fujita, Y. ( ds.), *Proceedings of the 20th Congress of the International Ergonomics Association*, vol. 825, pp. 702–706. Springer, Cham (2019). https://doi.org/10.1007/978-3-319-96068-5_75
19. Mwanza-Simwami, D.: Using activity-oriented design methods (AODM) to investigate mobile learning. In: Giasemi, V., Pachler, N., Kukulska-Hulme, A. (eds.) *Researching Mobile Learning: Frameworks, tools and research designs*, pp. 97–122. Peter Lang Verlag, Bern, Switzerland (2009)
20. Stake, R.E.: Standards-based and responsive evaluation. *Eval. Program Plann.* **28**, 119–120 (2005)
21. Reerink-Boulanger, J., Somat, A., Jamet, E., Barbel, P., Erhel, S.: Supportive community living service conception: information communication technologies acceptability and organizational integrative assessment methods in contextual environment. In: *XIXth IAGG World Congress of Gerontology and Geriatrics*. Paris (2009)
22. Engestr m, Y.: Innovative learning in work teams: analysing cycles of knowledge creation in practice. In: Engestr m, Y., Miettinen, R. (eds.), *Perspectives on Activity Theory*, pp. 377–406. Cambridge University Press (1999)

Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter’s Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter’s Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

