

Towards a More Inclusive Triple Transition and Quadruple Helix Innovation Ecosystems: The Case of the Catalanian Col·laboratori on Health and Wellbeing Within the INTEGER Project

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This research tackles some of the main challenges faced by European innovation ecosystems, which need to encompass a more inclusive, interdisciplinary, human and environmental-centric triple transition (Caro-González et al., 2023).

Many regions in Europe have been promoting and enhancing collaboration and cooperation among the main stakeholders within their innovation ecosystems. However, most of the cases are focused on the knowledge triangle approach which is not always suitable for the inclusion of many participants, particularly those coming from the quadruple helix: citizens and social entities and actors from different age groups (intergenerational collaboration).

This research is based on the INTEGER project – **Interconnecting 4 helix innovation ecosystems in European regions** (2023–2025), which addresses the deep existing gap between social innovators and entrepreneurs and their regional innovation ecosystems in three European regions (Catalonia, Hamburg and Krakow). The main research question is how a collaborative model, based on the quadruple helix approach, can harness higher potential of EU innovation in the critical policy area of healthy living and wellbeing.

The research will use the data of the Catalanian Col·laboratori initiative, analysing specifically the case of the Col·laboratori on Health and Wellbeing to reveal the potential and barriers to consolidate the participation of social innovators.

Keywords: triple transition, innovation ecosystems, quadruple helix, healthy living, wellbeing, social innovation, living labs, INTEGER

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1. Introduction

This research tackles some of the main challenges faced by European innovation ecosystems, which need to encompass a more inclusive, interdisciplinary, human and environmental-centric triple transition (social, green and digital) (Caro-González et al., 2023).

Many regions in Europe have been promoting and enhancing collaboration and cooperation among the main stakeholders within their innovation ecosystems. However, most of the cases are focused on the knowledge triangle approach which is not always suitable for the inclusion of many participants, particularly those coming from the quadruple helix: citizens and social entities and actors from different age groups.

This research will explore the case study of the Catalanian Col-laboratori on Health and Wellbeing, which is testing and unfolding a new generation of quadruple helix living labs in the critical policy area of healthy living and wellbeing. It is based on two umbrella initiatives:

- a) the Catalanian Col-laboratori initiative, an open initiative under continuous evolution promoted by the i2Cat Foundation and the Generalitat de Catalunya,¹ and
- b) the Horizon Europe project titled: INTEGER project – **Interconnecting 4 helix innovation ecosystems in European regions (2023–2025)**,² which addresses the deep existing gap between social innovators and entrepreneurs and their regional innovation ecosystems in three European regions (Catalonia, Hamburg and Krakow).

2. Research question

The main research question is how a new collaborative model, based on the quadruple helix approach, can be unfolded and tested in the Col-laboratori on Health and Wellbeing to harness a higher potential of EU innovation in the critical policy area of healthy living and wellbeing.

3. Objectives

The examination of quadruple helix dynamics within multi-level initiatives has become increasingly pertinent in contemporary research, especially in the context

1 The initiative is co-financed by FEDER funds and is supported by the work of various institutions and people from all over the Catalanian regions, represented in several territorial col-laboratories.

2 <https://integercollab.eu/> (Accessed May 2nd, 2023).

of regional and European innovation ecosystems. This paper aims to depict the evolution and dynamics of the Col-laboratori on Health and Wellbeing, analysing patterns, relationships and significant insights that have developed throughout the study period.

4. Methodology

This research is based on a mixed-method approach, combining quantitative data analysis, case study analysis and auto-ethnographic records, which is well-suited to investigate the complex dynamics among quadruple helix actors in multi-level initiatives. This methodology facilitates a comprehensive examination of multi-actors interactions, ensuring a holistic understanding of how actors from various innovation types collaborate. The triangulation of data sources adds depth and rigour to our research, contributing to the advancement of knowledge in this crucial domain of quadruple helix dynamics.

This section elucidates the rationale behind the selection of a mixed-method approach, specifically incorporating quantitative data analysis, case study analysis and auto-ethnographic records. This methodology aims to holistically investigate the interplay among quadruple helix actors representing various innovation types: social, business, and technology-driven.

Quantitative data analysis plays a foundational role in this research methodology. The utilisation of quantitative data allows for a comprehensive assessment of the evolution of quadruple helix actors within the multi-level initiative. By quantifying and tracking key variables, such as the growth rate of actors, their distribution across sectors and temporal trends, we gain a macro-level understanding of the initiative's dynamics. The quantitative data offers the advantage of objectivity, allowing for statistical comparisons and trend identification.

Complementing the quantitative component, **case study analysis** brings depth and contextual richness to our investigation. By selecting a specific initiative as a case study, we delve into the intricate interrelationships among quadruple helix actors at the micro-level. The research is based on the case of the Col-laboratori on Health and Wellbeing from its formal inception in April 2021 up till May 2023. It is envisaged as a longitudinal study of the evolution from triple to quadruple helix dynamics. This in-depth analysis helps us elucidate the nuances, motivations and challenges faced by actors representing different innovation types. It provides a platform for understanding how these actors collaborate and compete within the initiative's ecosystem.

The incorporation of **auto-ethnographic records** introduces a unique dimension to our methodology. As a researcher, my direct involvement in the initiative as an observer-participant enables me to capture the subjective experiences, perceptions and reflexive insights of key actors. This auto-ethnographic approach facilitates a nuanced understanding of the dynamics and interactions occurring within the

quadruple helix. It allows for the exploration of tacit knowledge, cultural influences and the impact of personal experiences on collaborative processes.

The triangulation of multiple data sources – quantitative data, case study analysis, and auto-ethnographic records – enhances the robustness and validity of our findings. This triangulation approach aligns with the principles of methodological pluralism, where different sources of data converge to provide a more comprehensive and nuanced understanding of the research problem. By cross-verifying findings from these diverse sources, we can mitigate potential biases and arrive at a more holistic interpretation of quadruple helix dynamics.

4.1. Data sources:

For the quantitative data, three main sets of data will be used:

1. To retrieve the information for the period between April and November of 2022, data has been extracted from the archive kept by the responsible of the Col-laboratori on Health and Wellbeing (Rafael Nualart).
2. The database that keeps a track record of the individuals and institutions participating in the different actions of the living lab since December 2022. This contains a curated list of activities and participants broken down into categories such as the institution each person works at, type of representing helix, gender and record of the different types of participation in the events and/or initiatives promoted to boost the new generation of quadruple helix collaborative endeavors.
3. Another large dataset has been collected from theglocal.network platform. This is the digital space specifically designed for building up the INTEGER community with the aim to unfold the quadruple helix Col-laboratori (van Staaldunin et al., 2023). Through the platform, we have been able to analyse the helices and regions of each participant in the different initiatives, as well as to carry out a continuous analysis of the interest and participation of each stakeholder.

By doing a triangulation and cross-referencing of these datasets, we have been able to analyse the key features of the establishment and evolution of quadruple helix dynamics (e.g. which are the most involved helices).

For the quantitative data, we have used an auto-ethnographic record (Caro-González, 2023, Autoethnographic Record INTEGER's deployment, i2Cat Foundation), which has helped to portray and understand the evolution and dynamics of the Col-laboratori on Health and Wellbeing, examining patterns, relationships and significant insights that have emerged during the period under study.

During the case study process of the Col-laboratori on Health and Wellbeing, several limitations and constraints were encountered that need to be acknowledged. These limitations pertain to factors such as sample size, biases and ethical considerations, which may have influenced the findings and interpretations of the study.

Firstly, the sample size of the participants involved in the quadruple helix co-creation process is still limited, due to the initial phases of the Col·laboratori and the INTEGER project. The insights and conclusions drawn from a limited sample need to be interpreted with caution and may not be representative of the broader context.

Secondly, biases may have influenced the data collection and analysis process (e. g. researchers' own perspectives, beliefs and assumptions, as well as from the participants' responses and behaviour). These biases can introduce distortions or omissions in the data, potentially impacting the accuracy and reliability of the findings. Steps were taken to minimise biases, such as maintaining objectivity, using multiple data sources and employing diverse research methods.

In the third place, ethical considerations were also taken into account during the case study process. Personal data of all participants were recorded and the researchers have a responsibility to ensure the privacy, confidentiality and security of this information (a Data Management Plan is under construction within the INTEGER project with the support of all partners). Ethical guidelines and regulations have been followed to protect the rights and well-being of the participants. However, it is crucial to recognise that ethical dilemmas may arise, particularly when dealing with sensitive information or when exploring complex social dynamics (such as the inclusion of minors in the co-creation dynamics). Safeguarding the welfare and interests of the participants remained a priority throughout the study.

Lastly, the use of autoethnographic records to portray and understand the evolution and dynamics of the Col·laboratori on Health and Wellbeing introduces subjectivity and potential biases. Autoethnography relies on personal experiences and reflections, which can be influenced by individual perceptions and interpretations. While autoethnography can provide valuable insights into lived experiences, it is important to critically analyse and contextualise these subjective accounts to avoid overgeneralization or misrepresentation.

5. Presentation of the case study: Portrayal of the Catalan Col·laboratori of Health and Wellbeing within the Catalan Col·laboratori initiative

Divided in three parts, this section describes the background context and evolution, as well as the main features of the case study.

5.1. Brief overview: definition and origins of the case study

The Catalan Col·laboratori is an open initiative in continuous construction. It was ideated by the Digital Society Technology (DST) at the I2Cat Foundation from the hypothesis that technologies are capable of bringing universal innovation systems closer to everyone. The different global challenges of recent years (climate change, social inequalities or pandemics) have alerted us to the need for such initiatives:

1. to bring the current innovation systems closer in a more global approach (in alignment with the United Nations 2030 Agenda),
2. to promote in a more orchestrated manner the active participation of all actors (e.g. from the quadruple or (n-)helix spectrum), and
3. to bring the social sector closer to the digital one.

A group of visionary innovators, who believed in the principle of inclusive innovation, had the mission to make innovation accessible to all and to realise this vision:

- They co-designed the Citilab, the first European social and digital innovation citizen lab, established in 2007 from an initiative that had been raised in 1997 in Cornellà de Llobregat, Barcelona. Citilab³ encompasses a training centre, a research facility and an incubator for business and social initiatives, exploring the impact of digital technologies on creativity, design and innovation. Its goal is to foster a cohesive and inclusive knowledge society, driving technological and social innovation and creating value, knowledge and online opportunities.
- They proposed the mission of “empowering everyone to innovate” within the European Network of Living Labs (EnOLL) in 2014.
- On the base of the growing number of labs in Catalonia, they suggested the idea of bringing these all together under a “lab of labs” concept, giving light to the Col·laboratori initiative in 2019.

A Col·laboratori can be defined as a “lab of labs”, meaning a meta structure that seeks for new ways of coordinating and tackling together digital innovation with the aim of solving systemic challenges. The Col·laboratories are becoming the new spaces enabling coordination and connection of organisations and stakeholders of the quadruple helix to work together identifying and addressing regional social challenges.

This is inspired by the concept of a “collaboratory”, introduced by Wulff in 1989. A collaboratory represents a unique physical or virtual space where actors can unite to tackle complex challenges that require diverse knowledge and resources. Collaboratories leverage advanced technologies and communication tools to facilitate collaboration across geographical disciplines and organisational boundaries (Wulf, 1989).

5.2. *Evolution of the case study*

Promoted by the Generalitat de Catalunya and the I2CAT Foundation, the initiative is co-financed by ERDF funds and supported by various institutions and stakeholders from different territories in Spain.

The aim of the Col·laboratori initiative is to contribute qualitatively to progress towards a digital and inclusive transition in the Catalanian region. It fosters and

³ <https://www.citilab.eu/> (Accessed May 30th, 2023).



Fig. 1. Col·laboratori's presence in the Catalanian region

promotes a digital society that enhances the innovative capacities of every citizen (Generalitat de Catalunya, I2Cat, 2019) by coordinating and promoting socio-digital collaborative innovation capacities in all the territories.

The Collaboratori initiative focuses on four key transversal areas: education, sustainability, digital transformation and social inclusion. These areas align with the RIS3CAT Agenda and seek to transform digital transformation in Catalonia, making it accessible to everyone. By addressing these priorities, the initiative aims to drive positive change, encourage individuals and communities and foster a more inclusive and sustainable society through collaborative innovation practices.

The beginnings of the Col·laboratori were at local level, focalised specifically in the area that was called Col·laboratori Catalunya CatSud, which mainly includes the area surrounding the city of Tarragona and the territory around Terres de l'Ebre, in the South West of Catalonia. The initiation of Col·laboratori's activities in the CatSud area was primarily motivated by the recognition of diverse entities, agents and stakeholders that demonstrated high levels of engagement and eagerness to participate in collaborative endeavours and drive digital social innovation for territorial transformation.

Following the success in CatSud, the same methodology, philosophy, work objectives and commitment to achieving social and digital transformation through innovation were extended to other regions within Catalonia (Figure 1).

The Col·laboratori Anoia, originally established in the Anoia region, has grown both in terms of participation and knowledge potential. It has now evolved into the Col·laboratori Catalunya CatCentral, encompassing a broader geographical scope that extends beyond the metropolitan area of Barcelona. This expansion includes regions such as Garraf, Alt and Baix Penedès, Anoia, Bages, Osona, Vallés Oriental and Occidental, and Maresme. The purpose behind this expansion is to enhance participatory engagement and harness the collective knowledge and potential of these additional regions.

The Col·laboratori CatNord primarily consists of the province of Girona, with participation from some entities located outside the province. At the time when the expansion of CatCentral had not yet taken place, CatNord had a stronger connection to the area of influence of Girona rather than to Barcelona or the Col·laboratori Anoia (Generalitat de Catalunya, I2Cat, 2019).

From the very beginning, the Col·laboratori Catalunya and its various territorial collaboratories have had distinct themes, cases, knowledge, and entities associated with them. Additionally, the COVID-19 pandemic and its wide-ranging impacts have significantly affected all regions, with some areas experiencing more acute consequences.

The Anoia region was the first in Catalonia to undergo strict confinement measures and remained tightly sealed off, with police checkpoints in place for an extended period. During this territorial confinement and the scarcity of personal protective equipment, various entities in the region initiated a collaborative effort to produce and distribute essential supplies, including protective materials and equipment.

This forced collaboration revealed a shared interest and desire among different types of entities and citizens to address common problems through participatory and collaborative approaches. As a result, the city council of Igualada, the capital of the Anoia region, approached I2Cat to develop a New Model for Socio-Sanitary Care Laboratory. Within this model, specific actions and challenges were identified in the health and digital sectors, with the involvement of actors from the quadruple helix. The Igualada city council subsequently took the lead in executing and implementing these initiatives.

The experiences and lessons learned from the collaborative response to the pandemic in the Anoia region highlighted the potential for participatory and collaborative problem-solving among diverse stakeholders. This paved the way for the development of innovative models and approaches in health and digital sectors, highlighting the importance of multi-sectoral collaboration and the involvement of actors from academia, industry, government and civil society in driving meaningful change.

During various activities, such as actions, visits, workshops and participatory or individual sessions with key stakeholders from each territorial Col·laboratori, we extensively explored the themes and specific circumstances which were unique to each Col·laboratori. Interestingly, regardless of the region, two recurring themes consistently emerged as areas of concern and attention: health and well-being and training and education.

Recognising the significance of these two themes that cut across all territorial col-laboratories, it was decided to establish what we have recalled as thematic or transversal col-laboratories. These aim to address issues that directly and substantially impact the diverse local or territorial col-laboratories. The objective was to provide an inclusive platform where entities from across Catalonia with shared interests or facing similar challenges could participate simultaneously.

The two thematic or transversal col-laboratories that were created to fulfil this purpose are the Col·laboratori Catalunya de Salut i Benestar (Catalonia Col-laboratory

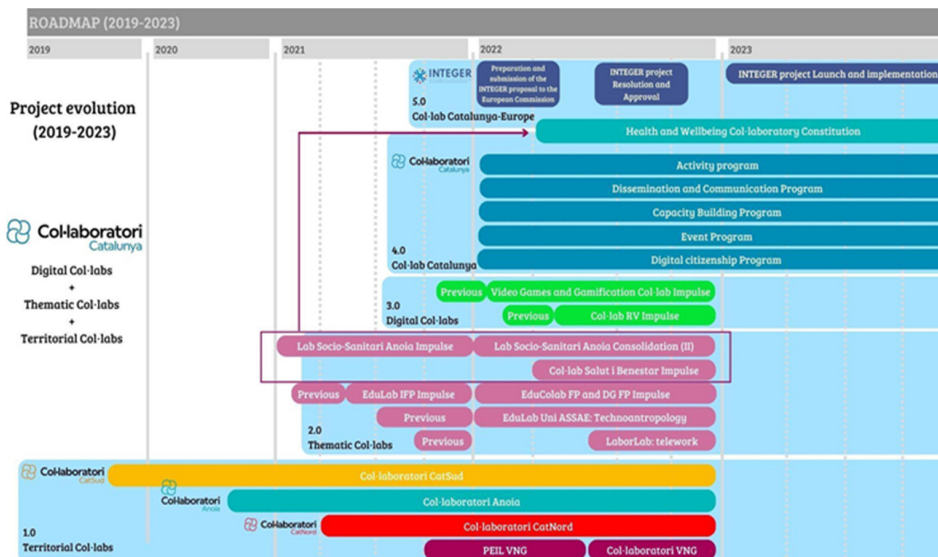


Fig. 2. Chronological evolution of the Col-laboratori from 2019–2023

for Health and Wellbeing) and EduCoLab (Education Col-laboratory). These col-laboratories serve as dedicated spaces where stakeholders from different regions can come together to collectively tackle issues related to health and well-being, as well as those concerning education and training.

The following figure (Figure 2) illustrates the evolution of the Col-laboratori initiative since its inception until the current phase of development. Although the Catalanian Col-laboratori on Health and Wellbeing is a young initiative, as it was formally established in April 2021, it is the first experiment to build the multi-level approach: local/regional, inter-regional and European.

Through the establishment of thematic and transversal col-laboratories, the Col-laboratori initiative expands its scope beyond the specific needs of individual territories and embraces a broader perspective aimed at driving meaningful change across the entire region and beyond with other regions and initiatives in Europe. This approach facilitates entities to collectively address shared challenges, capitalise on collective expertise and collaborate towards the development of sustainable solutions. Moreover, it encourages collaboration not only among entities within Catalonia but also with organisations from other regions.

5.3. Significance of the case study

The Catalanian Col-laboratori on Health and Wellbeing is still a young initiative, it was formally established in April 2021. However, this case study highlights the significance of a number of elements faced by European innovation ecosystems:

a) The long-term approach of a broader systemic vision (e.g. the design of universal

- innovation systems) within which the Col·laboratori initiative and the INTEGER project integrate;
- b) The adoption of a more inclusive, interdisciplinary, human and environmental-centric approach when addressing big challenges, such as the ones faced in the field of health and wellbeing;
 - c) The impact-driven avenues of co-creative experimentation. These try to deliver solutions from socio-digital-business innovations with the involvement of more diversity of sectors in public health, working from different perspectives or the need to demonstrate cost-effectivity and return of investment).

A long-standing concern for the European Commission, coined as the European Paradox (EP), refers to the perceived challenge of translating scientific advancements into marketable innovations. The European Parliament already addressed this issue in a 1995 Green Paper by underlying Europe's strong performance in scientific research coupled with difficulties in converting research into successful innovations (European Commission, 1995; Bello et al., 2022; European Commission et al., 2022).

By leveraging the quadruple helix model and promoting collaborative innovation, this case study aims to unlock the higher potential of EU innovation in the critical area of healthy living, contributing to the overall advancement of European innovation ecosystems. This has been highlighted by the Call for Proposals of the European Innovation Council that has funded the European project titled: INTEGER. This project acts as a leverage for the Col·laboratory initiative because it introduces a more systematised social and digital innovation but at the same time is based on the principles of co-creation, open, flexible and adaptable socio-digital innovation. The facilitation has been started to be experimented and a preliminary definition of the facilitation tasks and aims has been contrasted with not only the responsible of the Catalan Col·laboratory but with their peers in the other two INTEGER participating regions (Hamburg and Krakow).

The transformation process of the Col·laboratori is to generate a structure and a space for co-creation that requires different types of roles that evolve and adapt as the initiative progresses responding to the evolving specific needs. To this end, the vision contributed by Artur Serra and Toñi Caro, together with the facilitation work of the innovation unit, has been key to the implementation and evolution of the initiative. Through an online collaborative space (theglocal.network), actors can share information, ideas or any other opportunities that might be interesting for the network, thus co-creating positive impacts for the region.

This initiative encompasses an internationalisation aspect, seeking to establish Catalonia as a prominent player in research and innovation. This positioning is crucial in fostering the development of universal innovation systems, an idea that Artur Serra has been promoting since the inception of the Col·laboratory initiative. This hypothesis aligns with the concept of "Internet is for everyone", pioneered by the Internet Society in the 1990s. It highlights the belief that nation branding, centred around the strengths of research and innovation, contributes to the

economic advancement of a country⁴ (Fan, 2006). By strengthening Catalonia's research and innovation capabilities, the initiative strives to enhance economic development and global recognition.

6. Data analysis and inform reasoning of the topic

6.1. Establishing collaboration

As explained above, from the Digital, Society and Technology unit (DST) at I2Cat, new ways have been designed and are under continuous adaptation to evolve towards the generation of quadruple helix (4H) collaborative initiatives. With the launching of the INTEGER project we are starting to see the boost of the Collaboratory, we have been able to carry out a preliminary analysis of several interesting data supporting this creation of dynamics and the potential impact that can be generated at a regional level.

Through the theglocal.network platform, users can meet and exchange in their own languages on questions, needs, demands and provisions at local or regional level, interregional or EU levels, thus enabling the co-creation of synergies and dynamics to further develop social transformation (van Staalduinen et al., 2023). A facilitator's corner has been established in the Col-laboratory digital space, with the aim of:

- a) dynamising co-creation and user participation;
- b) creating dynamics that provide interesting insights for the community.

Significant efforts have been made to engage with and invite participants from the quadruple helix actors. After extending invitations and receiving confirmations, we are pleased to present the following participation results (Table 1).

In terms of participation, extensive efforts have been made to reach out to potential participants for the initial events, resulting in 339 invitations extended to prospective co-creation event attendees. The outcome was positive, with over half of the invitees, a total of 134 individuals, ultimately took part in at least one of the six events.

The active involvement of individuals is a critical aspect of collaborative initiatives, and it is noteworthy that the percentage of attendees surpassed the number of registered participants. This highlights the significance of individuals' willingness to engage, as we observed a higher turnout than initially anticipated, including both registered and non-registered attendees. This was envisaged in the design of the engaging mechanisms and dynamics, which was based on the legitimate expressed interests of committed actors. As registered in the auto-ethnographic record (Caro-González, 2023, 'In this

4 This is linked with the notion that nation branding based on the strengths of research and innovation help economic development in a country.

People invited-attended



Table 1. Relation between participation, registration and invitations to the initiatives⁵

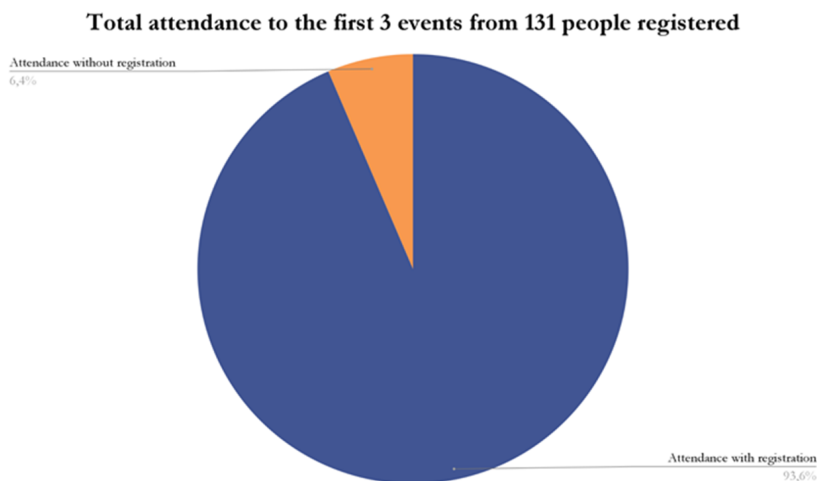


Table 2. Relation between attendance and registrations⁶

⁵ For the events held in March and May, we only have attendance data for the individuals who actually participated. Unfortunately, we do not possess records of the individuals who were invited or registered. This is due to our experimentation with transferring participation and co-creation to the digital realm, where we utilised Google Calendar for issuing invitations and confirming attendance. As a result, the specific details regarding the invited and registered individuals are not available for these events.

⁶ This graph reflects the data of the first three events organised.

Attendance by gender

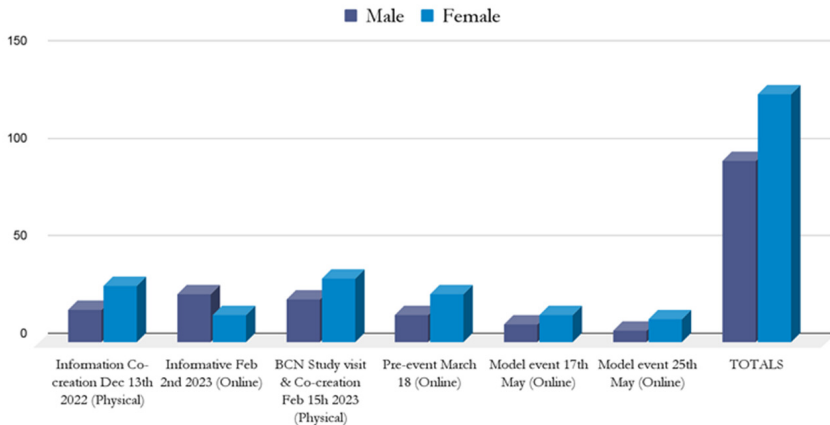


Table 3. Relation between gender and participations

Participation in the initiatives per Helix

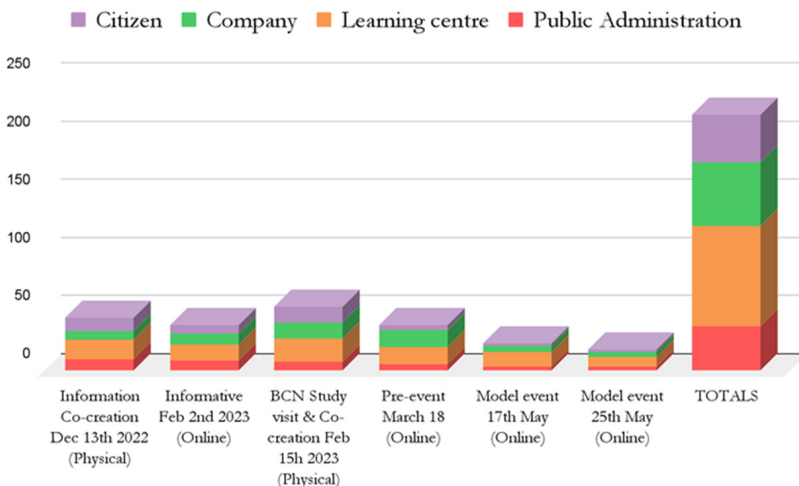


Table 4. Relation between participations and helices

table I have presented the relationship between WHO's challenges with the inputs of the key stakeholders before the model event to define the challenges. These have been crossed with the interests detected through the inspirational cases of the three regions to see how to move forward with the most active agents and the most mature projects and services', 2023-4-18).

As for the participation numbers, the aggregate total is not an absolute total, but a result showing the recurrence of participation, with 134 people being the real participants, and 220 being the number of participations.

With regard to the division of participation by helices, we found that the learning centres and people related to Academia stand out notably. With this we have been able to verify that it is in this area where social transformation can count on greater resources. An interesting fact is that public entities and citizens are less represented in practically all the initiatives developed, which shows that despite the social objective of this type of initiative, there is still more efforts to be made to include these types of helices in the co-creation process.

The significance of ensuring equitable inclusion across all helices is evident. Previously, we observed a dominance of private entities and sectors in such initiatives. However, with the alignment of the two initiatives (Col-laboratori on Health and Wellbeing and INTEGER project), our aim is to promote a more active participation of the public sector and citizens. As we have witnessed, they can contribute significantly to the creation of synergies, accentuating a human-centric approach to innovation. By fostering the involvement of diverse stakeholders, we strive for a more inclusive and balanced collaborative ecosystem.

We have compiled the total number of participations per helix to provide an overall view of the engagement in the 6 events. This combined sum demonstrated the total contribution from each helix.

Research has shown that social innovation tends to be more feminised, while business innovation tends to be more masculinized (Poutanen, Kovalainen, 2017). Understanding these dynamics will contribute to creating a more inclusive and diverse ecosystem for innovation and co-creation.

In order to provide a comprehensive overview of participation by gender and helix, we have compiled the actual total number of participants in each event. The total column represents the number of individuals who participated in one or more events, with some attending one, two, three, four, five, or all six events. Based on this data, we can summarise that out of the 134 participants, 76 were women and 58 were men.

Achieving gender parity is crucial in fostering collaborative co-creation across all helices to drive large-scale transformative impact. Thus, the invitation strategy and community-building efforts have been designed to ensure gender balance. As the project progresses, it will be important to study the longitudinal gender composition and evolution of the community in the different types of innovations.

6.2. Drivers, limitations and barriers for bridging the gap between the local and the European levels

6.2.1. Drivers

The process of generating a sense of community is key in building bridges between collaborators. We encourage people to feel part of a community as this enables them to feel confident to co-create and share ideas. By building strong relationships, we have seen that people can create synergies towards social innovation.

During the project we have also been able to get to know the ecosystems first hand, and to have the first face-to-face meetings, where we believe is a key factor

for the creation of relationships that will later allow us to co-create together. So the prior knowledge of the project is essential to develop the initiatives and invite and share insights with the potential partners.

6.2.2. Limitations and barriers

From the analysis of the process through the auto-ethnographic approach we have identified four main limitations or barriers:

Unclear expectations and instructions: From the beginning, there were differing expectations among project partners regarding the model event, leading to moments of uncertainty and unclear instructions. Feedback is sought to address these barriers and challenges and improve the co-creation processes.

Time limitations for building relationships: Sufficient time is necessary to establish trusting relationships that foster impactful co-creation. Building connections between individuals and institutions takes time and stronger links facilitate the sharing of ideas in a more organic and spontaneous manner. More time would have helped strengthen contacts and enhance the sense of closeness among participants.

Learning curve for virtual community building: Facilitators faced the challenge of quickly familiarising themselves with a new virtual space and encouraging its use. Resistance from potential collaborators posed an additional obstacle. Capacity building and training initiatives were implemented to familiarise the community with the collaboration platform and promote active participation.

Barriers to interregional collaboration: Establishing social and interpersonal relations throughout the process is crucial for creating impact in social innovation within an inter-regional and potentially international community. Several meetings took place physically to ease personal knowledge. The virtual space, while facilitating collaboration, made interactions more impersonal. Limited time for interpersonal and inter-institutional collaboration hindered the sharing of ideas between participants from different regions. Interregional collaboration posed challenges, with language being a key factor.

In relation to the above, due to the lack of time to generate and establish interpersonal and inter-institutional collaborations, we found a resistance to share ideas with collaborators from other regions. In fact, it was difficult enough to build relationships between participants from the same region, so when it came to engaging with participants from other regions, the problem was considerably exacerbated. In this sense, we could see that when we met in different groups, the agents from Catalonia spoke in Catalan, those from Hamburg in German and those from Poland in Polish. Therefore, we believe that establishing social relations throughout the entire procedure is essential in a context where we want to create an impact on social innovation through an inter-regional and potentially international community.

7. Conclusion

The case study on the Col·laboratori on Health and Wellbeing highlights the significance of inclusivity in the innovation process. By bringing together stakeholders from various sectors and disciplines, this collaborative initiative fosters co-creation and knowledge exchange. The quadruple helix approach, involving government, industry, academia, and civil society, plays a vital role in driving innovation and addressing societal challenges.

This multi-stakeholder approach serves several key objectives. Firstly, it enables a deeper understanding of the complex issues surrounding health and wellbeing, encouraging the development of innovative solutions. Secondly, it bridges the gap between social innovators, entrepreneurs and regional innovation ecosystems, ensuring diverse voices and perspectives are represented. By including social innovators and entrepreneurs, the case study taps into their unique insights and ideas, promoting a more inclusive and impactful approach to addressing health and wellbeing challenges.

Furthermore, the case study recognises the importance of adopting a human-centric and environmentally-conscious approach to innovation. It acknowledges that innovation should not solely focus on economic growth but also prioritise improving individual wellbeing and environmental sustainability. By emphasising human wellbeing and environmental considerations, the case study aligns with the triple transition towards a more sustainable inclusive and resilient future.

As a preliminary analysis, this case study provides an initial glimpse into the emerging co-creation dynamics. Further analysis with a targeted impact indicators dashboard will enable a more comprehensive examination of complex co-creation activities, including factors such as the number of stakeholders from each helix, participation recurrence, regional representation, joint assets, etc.

Implications for theory, practice, and future research:

The case study underscores the importance of inclusive innovation processes that involve diverse stakeholders. It highlights the potential for co-creation to drive transformative change in health and wellbeing. The quadruple helix approach offers valuable insights for other collaborative initiatives seeking to address societal challenges and encourages the integration of different sectors and perspectives.

Based on the findings, it is recommended that future research focus on evaluating the long-term impacts of the initiative, tracking the evolution of co-creation processes and assessing the sustainability of the innovative solutions developed. By continually assessing and refining the approach, the Col·laboratori on Health and Wellbeing can serve as a model for other similar initiatives, contributing to the advancement of collaborative innovation practices and the improvement of health and wellbeing outcomes (e.g. a new governance and co-creation model).

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