Transnational Trends and Demand Report on Social Service Providers and Care for People with Disabilities and Elderly People

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1. Introduction

People with disabilities and the elderly are one of the most vulnerable social groups. They do not have the same opportunities to participate in society, whether professionally, socially, touristically or culturally, and they are under marginalisation and social exclusion. This social problem should not be ignored since we live in a demographic period of population ageing, and and growing rate of people with disabilities[1]. This problem has not bypassed Germany and Croatia, which are the implementers of the **Innoclusion** project, as part of which this analysis and research is being conducted. This **report aims** to analyse societal **trends** and **their impact** on people with disabilities, elderly people and social service organisations, and the **needs and demands** of care based on qualitative research conducted in the partner organisations on the transnational level.

According to the latest report on people with disabilities published by the Croatian Institute of Public Health (2022), 16 per cent of the total population in Croatia has some form of disability, i.e. the total number is 624,019, while the number of elderly people aged 65+ years according to the last population census from 2021 is 22.45 per cent. A similar situation occurs in Germany, where the trend of population ageing is recognised. According to statistical data of the Statistics Research Department from June 2022, in 2021, the share of the German population aged 65+ was 22 per cent. Additionally, according to DPA data, 7.8 million people have some form of disability in Germany, which represents 9.4 per cent of the population. Given this **growing demographic trend**, it is necessary to emphasise that people with disabilities[2] and elderly people struggle with a series of difficulties in their daily social and professional lives, which are impacted by several factors and which have multiplied due to the health and energy crisis, stigmatisation, social and spatial exclusion (rural-urban challenges), and intensive digitisation of society. Due to the inability to cope with everyday tasks normally, they are most often cared for by social service providers, at the formal and informal level. However, there is also a lack of substantial financial resources and a lack of skilled workers in the care sector. This is why social service providers face some challenges in ensuring the continuous provision of healthcare services to people with disabilities and the elderly.

[1] In the EU over 100 million people live with disabilities, according to European Disability Forum (2019) in their publication 'How many persons with disabilities live in the EU?'.
[2] Persons with disabilities still face considerable barriers in access to healthcare, education, employment, recreational activities, as well as in participation in political life. The impairment may be in physical or mental health, but also in age or housing situation. People with limited cognitive abilities cannot participate in digital life and the use of social media because the media are rarely tailored to such people. People with physical disabilities find it much harder to get a job because it is blocked by barriers.

Thus, the **Innoclusion project** aims to **develop, test and implement user-centred green and digital solutions through the Living Labs model to improve the lives of elderly citizens and citizens with disabilities and to optimize further and decarbonise social service organisations according to identified needs and trends[3].**

2. Methodology and Objectives

This report presents the findings of a study examining the **needs, trends, gaps**, and **demands** in the provision of care for older adults and persons with disabilities, as well as the needs of social service providers in Germany and Croatia. The study employed a **mixed-methods research** design comprising two main components: (1) an analysis of societal trends and their implications, accompanied by a mapping of best practices through an extensive **literature review and desk research analysis**; and (2) an assessment of the needs of social service provider organizations and their beneficiaries - namely older adults and persons with disabilities - in Germany and Croatia, conducted through **qualitative research using semi-structured interviews.** The overarching aim of this research was to identify social needs and detect existing social challenges in order to support the development of social innovations capable of effectively addressing the needs of both social service providers and their beneficiaries.

The first part of the analysis examines the current state of care for persons with disabilities and older adults, as well as the position of social service providers, within the national contexts of Germany and Croatia. This assessment draws on statistical data, legislative frameworks, and relevant policy measures. Particular attention is devoted to the influence of key societal trends, including demographic shifts, economic crises, the COVID-19 pandemic, processes of digitalisation, spatial segregation, and broader cultural transformations. In addition, a systematic mapping exercise was conducted to identify digital social innovations and other pioneering approaches in the field of care and support. These examples served as reference points for evaluating their transferability and potential applicability within the German and Croatian contexts.

Secondly, qualitative research was conducted from December 15, 2023, to January 15, 2024, in partner organisations in Germany and Croatia as part of the demand study. The target groups sampled in this research were: 1) social service providers in the organisations CPUK (Center for home assistance in Medjimurje County), Diakonie Kork, Evangelische Altenhilfe St. Georgen and VAL Lastovo; vulnerable groups in need - elderly

[3] This report is funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

people and people with disabilities - who are beneficiaries of the social services in those organisations; and 3) family members as informal caregivers. Five semi-structured interviews were conducted in the Diakonie Kork – Epilepsy Center in Germany and Evangelische Altenhilfe St. Georgen who provide outpatient and inpatient diagnostics and therapy, rehabilitation, research and teaching, and among people with disabilities, and in Evangelische Altenhilfe St. Georgen, as well as seventeen semi-structured interviews in Croatian organisations of VAL Lastovo and Center for home assistance in Medjimurje County (CPUK) that provide home assistance and in-home care for elders. The interviews were conducted online via Zoom, face-to-face, and telephone. Based on qualitative research findings, personas of target groups of users for each organisation/country were created. The method of creating a persona is an innovative method that helps in the process of better understanding the needs of users with the aim of meeting the needs through that product and/or service. The **goal** of this overall study was to identify needs, trends and demands for the future design of social services within Living Labs in Germany and Croatia through digital and innovative solutions that are tested.

3. Social Services in Context: Governance, Structures, and Frameworks

Contemporary societies are characterised by population ageing and accelerated digitisation, which is why today's world lives increasingly dependent on ICTs. Therefore, this report in these two chapters summarises the **analysis of the impact of global and regional trends** (e.g., demographic changes, energy crisis, pandemic crisis, rural-urban challenges, digitisation) on citizens with disabilities, elderly people and social service providers who nurture them. Besides that, an overview of the relevant current situation in the social welfare sector in Germany and Croatia is briefly presented. This analysis is the basis for **further developing new innovative solutions** through the **Living Labs model** for the transnational call for applications and scouting innovative solutions by enterprises (mainly start-ups, SMEs) on the market within the Innoclusion project[4].

Demographic and social changes over the past few decades have transformed healthcare needs, making **long-term care**[5] for the frail elderly and people with disabilities a major social and policy issue. Long-term care for elderly people and people with disabilities

[4] The overall project aim of the transnational innovation partnership is to further develop, test and implement user-centred green and digital solutions to improve life of citizens with disabilities, and elderly people and to further professionalise and decarbonise the social service organisations.
[5] Care is defined as providing what is necessary for the health, welfare, maintenance, and protection of someone or something (Cambridge University Press, 2019).

generally refers to home care and institutional care. Care can be organised informally[6] or formally. However, care policies for the elderly and persons with disabilities reflect the specificities of the social and political context of the country. In this research, the focus is on social care services for the elderly and people with disabilities in **Croatia and Germany**. European countries, including Croatia and Germany, face increased needs for long-term care services and demands to control social costs. They strive for similar solutions, such as combining services and financial benefits that support the family in providing care. The process of deinstitutionalisation is closely related to long-term care, so non-institutional services are seen as a more financially sustainable alternative to residential care and a response to users' preferences to stay in their homes.

At the EU level, in terms of care for the elderly and people with disabilities, we have a dominant system of **personal social service (PSS)[7].** PSS is provided by governmental organisations, non-governmental agencies – NGOs or not-for-profits, and by commercial for-profit organisations. However, most social care is still provided informally and unpaid by family members, friends, neighbours, colleagues and unpaid volunteers. PSS may be provided in service beneficiaries' own homes (domiciliary care), in day centres of various types, and in residential homes and institutions.

3.1. The Croatian Context

The primary and relevant laws that determine the regulatory framework of social care for the elderly and persons with disabilities in Croatia are the *Law on Social Care,* the *Law on Labor, Social Security and Pension Law, the Law on Inclusive Allowance, the Law on Professional Rehabilitation and Employment of Persons with Disabilities, the Law on foster care, Family law* and several by-laws and strategies such as *Social care strategy for older people*[8]. The law regulates monetary benefits related to personal disability benefits, one-time and monthly payments or allowances for assistance and care. In

[6] Informal care is unpaid care provided by family, friends or volunteers and plays a crucial role in the caregiving process to a person with a chronic illness or disability (Roth, Fredman, & Haley, 2015). Today, informal care is a common way of caregiving and its demand is increasing in many countries.

[7] Four PSS types are: 1) The informal sector - social care is provided freely – but not necessarily willingly - by families, friends, neighbours, and colleagues. This is difficult to quantify but remains the main source of social care in all countries; 2) The voluntary non-profit sector - the care provided by NGOs both large and small, using both paid and unpaid resources; volunteers working within and outside formal schemes. In recent years, new types of not-for-profit organisations have appeared eg. Trusts; 3) The state sector - this includes services provided by central, regional and local governments. PSS*ƒ* may be provided by separate PSS departments and/or as part of a larger department eg. health, social security, education; 4) The for-profit sector - this is growing in size and importance in some countries eg. the UK (Anheier, 2000).

[8] In addition to the above-mentioned regulations, social care is provided by the general acts of regional and/or local self-government units, which define social programs in the area of their jurisdiction, as well as their content, scope and methods of financing. Also, it should be pointed out that the care of the elderly also takes place through various policies, strategies and programs, regardless of whether they are national, regional or local programs.

Croatia, the system of social assistance for people in need of care and support has recently undergone significant reform. Previously, individuals - elderly people, persons with disabilities, and other vulnerable groups - were entitled to specific allowances for assistance and care. These benefits were designed to help cover the cost of daily support, caregiving, and essential needs for people who could not take care of themselves independently. However, this system has now been replaced by a new model known as the “Inclusive Support” (inkluzivni dodatak). In addition to the monthly Inclusive Support, individuals may also access one-off benefits, which are not paid regularly but can be claimed when specific needs arise. These are extraordinary forms of assistance, intended to help with unexpected or exceptional expenses, such as costs related to the death of a family member, hospital treatment or medications not fully covered by health insurance.

According to the law, social services for the elderly and people with disabilities in Croatia are limited to: i) accommodation services in state or county homes as long-term care facilities, ii) non-institutional accommodation services and iii) home assistance services, as in-home care service[9] (VAL Lastovo and CPUK, project partners, provide this type). Social service care is provided by government agencies, non-governmental organisations (NGOs), non-profit institutions, private for-profit caregivers, and local municipalities.

According to data from 2015 from the latest Social Care Strategy for Older People, there were 170 home help providers in Croatia. According to statistical data from the Ministry of Demography, Family, Youth and Social Policy (2015), 3,328 people aged 65+ received the service help at home based on the Centre for Social Care solution. Additionally, the National Plan to Equal Opportunities for Persons with Disabilities for the period from 2021 to 2027 represents a strategic planning act by which the Republic of Croatia continues to create a policy towards persons with disabilities, respecting the UN Convention on the Rights of Persons with Disabilities and other contemporary international standards. To conclude, like most post-communist countries, the care system remains of a residual character, organised according to the principles of the social welfare system, fragmented and with insufficiently developed infrastructure. Therefore, care for the elderly and people with disabilities falls primarily on the family, leading to difficulties balancing family obligations and paid work. The system in Croatia faces a series of non-transparencies that lead to an unequal position of beneficiaries and service providers (e.g. defining the price of services, absence of public tenders for new providers and criteria for admission to homes). The price policy, which is based on the administrative decision of the leading ministry and does not reflect the content of the services, erodes their quality, especially in non-state homes. There is a trend of insufficient care and a deficit of social service

[9] The right to a home help service includes: 1) organising meals (procurement and delivery of ready-made meals to the home; 2) doing housework; 3) maintenance of personal hygiene; 4) meeting other daily needs. The decision on the recognition of the right to the home help service is made by the center for social care.

providers. The third sector is central to practical and psychosocial support for people in need. Third-sector organisations are essential to maintaining services, such as help in the house. However, the precarity of the third sector needs and social services must be addressed to ensure it can continue supporting disabled and elderly people. Besides that, regional differences in the availability of social care services persist.

3.2. The German context

Germany's comprehensive social system plays an important role in the care and support of people with care needs. Germany has a well-established legal framework for elderly care and people with disabilities in the twelve Social Codes. The most relevant ones are *Book XI (Sozialgesetzbuch XI), Book IX,* and the *Integration Assistance Act*, which supports social integration, education, employment and long-term care insurance. The social care system for people with disabilities in Germany is characterised by public and private support services focusing on various aspects of daily life, healthcare, and social integration. Thus, Germany has a compulsory long-term care insurance system that provides financial support for individuals who require assistance due to disabilities or age-related conditions. This insurance covers a range of services, including in-home care (personal hygiene, meal preparation, and household tasks), nursing home care as a residential setting, assistance with daily living activities and other support services. Besides that, the Caregiver Leave Act enables working family carers to combine their job with caring for a close relative.

According to the Federal Statistical Office, the proportion of people over 60 was 29.4 % in 2022. In 2021, 7.795.340 people in Germany were officially registered as severely disabled, but the number of unreported cases is higher. The life expectancy of men and women in Germany has been rising continuously over the last decades. At the end of 2021, there were 4,961,146 people in need of care in Germany, and that is why the care rate is also rising: from 2,5% (2001) up to 6%. However, the Federal Statistical Office reports that in 2020, 96% of older people lived alone in their own homes, and only 4% in residential care homes. To be more precise, only 24% of people in need are cared for by outpatient nursing and care services, 56% of them are cared for by relatives, and only 20% of people in need are cared for in fully inpatient care homes (Federal Statistical Office, 2022).

The Federal Statistical Office reported for 2021 the existence of 16,115 nursing homes and 15,376 outpatient care service organisations. With the growing number of people needing care, the need for personnel in the care sector is increasing. Outpatient services are increasingly important in relieving the burden on family carers as more and more people in need of care are being cared for at home. With this in mind, there is an increasing shortage of skilled nursing staff. According to an analysis by the Cologne

Institute for Economic Research, there will be a shortage of around 307,000 nursing staff in inpatient care homes in Germany by 2035[10]. The number of people needing care is increasing while the number of professional carers is decreasing. Accordingly, it will increasingly be the task of relatives to care for those needing care at home in the future. Another reason for this assumption is that inpatient care is usually associated with high costs, so relatives are likely to decide against this option. Given this, the nationwide strategy should focus on outpatient care rather than increasing the number of inpatient care homes. More should be invested in information and counselling for family carers. It will be necessary to strengthen this group of people in caring tasks to close the gap in professional care.

To conclude, many countries adopted the United Nations Convention on the Rights of Persons with Disabilities in 2006, and along with it, the convention's definition of disability. According to this definition, "persons with disabilities include those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others" (UN Enables, 2014). Additionally, the United Nations Convention on the Rights of Persons with Disabilities (CRPD) has reaffirmed "that the universality, indivisibility, interdependence and interrelatedness of all human rights and fundamental freedoms and the need for persons with disabilities [have] to be guaranteed their full enjoyment without discrimination" (CRPD, Preamble). The European Union and all its member states are parties to this convention. The CRPD guided the EU to the first strategy to tackle these problems, which has been replaced by the EU's Strategy for the Rights of Persons with Disabilities 2021- 2030. The objective of this Strategy is to ensure that people with disabilities in Europe, regardless of their sex, racial or ethnic origin, religion or belief, age or sexual orientation, enjoy their human rights, have equal opportunities, equal access to participate in society and economy, are able to decide where, how and with whom they live, move freely in the EU regardless of their support needs, and no longer experience discrimination. Several initiatives are planned as part of the EU action plan, and one of them for 2024 is a framework for social services of excellence for persons with disabilities.

4. From Providers to Beneficiaries: Societal Trends in Care and Support

This section explores the **societal trends** that are shaping, and are anticipated to continue shaping, the provision of social care and support services, alongside the changing needs of service beneficiaries. Understanding these trends is essential for informing the design of future social care systems and the development of effective policy responses. The analysis is grounded in recent research in the field and complemented

[10] Statistisches Bundesamt. *Personal in Pflegeheimen und ambulanten Pflegediensten*.

by insights derived from real-world experiences, capturing the concrete effects of these developments on both service providers and end beneficiaries.

4.1. Demographic Change and Population Ageing

Demographic shifts remain one of the most powerful drivers of change in social care. Europe's population is **ageing** rapidly: by 2070, nearly 30% of Europeans will be over 65, compared to 20% in 2021[11]. With longer life expectancy comes an increasing prevalence of chronic conditions and functional limitations. Higher rates of dementia, Parkinson's disease, and other age-related illnesses are already placing additional strain on social service systems.

Another defining trend is the growth in **single-person households**. Rising numbers of older adults living alone face greater risks of poverty, unmet care needs, and social isolation. **Informal caregivers**, often family members or friends, are simultaneously under pressure due to shrinking household sizes and shifting family structures. As a result, the burden of care is increasingly falling on formal social services and assistive technologies.

This dynamic has also spurred discussion of the **"silver economy**", recognising the potential economic dimension of an ageing society. However, despite opportunities in age-friendly products and services, this **market remains underutilised due to a lack of entrepreneurial initiatives**. Harnessing the silver economy could not only ease pressure on services but also create inclusive economic opportunities.

4.2. Economic Pressures, War Crisis, and Inflation

Economic instability is a central concern for both providers and beneficiaries. Rising costs of service provision - driven by **inflation**, higher operational expenses, and limited public funding - are eroding the financial sustainability of social service organisations. At the same time, national and EU-level financial uncertainty limit long-term planning, investment, and innovation in the sector. These economic pressures also contribute to increased labour migration, as more individuals seek employment opportunities abroad. This trend not only reduces the availability of family members to provide informal care for older persons but also exacerbates the shortage of qualified professionals capable of delivering high-quality social services domestically.

[11] European Association of Service Providers for Persons with Disabilities (EASPD). 2021. Technology in Social Care and Support Services. Person-centred Technology Membership Forum. https://easpd.eu/fileadmin/user_upload/Publications/EASPD_PCT_paper.pdf.

For beneficiaries, the consequences are stark. Older people, people with disabilities, and single-person households are disproportionately at **risk of poverty**, limiting their ability to access services. In Croatia, for example, **every fourth citizen lives on the edge of poverty**, with vulnerable groups such as elderly people and persons with disabilities most severely affected. Additionally, the **war crisis** in Europe has further worsened inflationary pressures, contributing to rising poverty and social exclusion. Together, these dynamics deepen inequality: **demand for care is growing precisely when financial and institutional resources are increasingly constrained**.

4.3. Workforce and Organisational Challenges

The **workforce crisis** in the social service sector is both structural and cultural. Staff shortages remain one of the sector's most pressing issues. Low wages, insecure contracts, and poor working conditions make it difficult to recruit and retain skilled professionals. Burnout among existing workers is widespread, while few young people are entering the profession. The profession also suffers from an **image problem**. Public awareness of the importance of social services remains limited, and stereotypes often reduce the sector to low-status care work. This **negative perception** discourages new entrants and further weakens the resilience of the workforce.

Beyond **staffing shortages**, organisational challenges also persist. **Weak collaboration** between different providers and sectors leads to **fragmentation** of services, undermining efficiency and innovation. Moreover, there is a **lack of consistent standards**, particularly in areas such as recognising the early signs of dementia and other complex conditions. **Without professionalisation and stronger career pathways, both service quality and workforce sustainability remain under threat**.

4.4. Digitalisation and Technological Transformation

Digitalisation is reshaping the delivery of social services in profound ways. Assistive technologies, telehealth solutions, and AI-based tools hold potential to improve independence, well-being, and social connectedness for older adults and people with disabilities. They also create opportunities for providers to enhance collaboration, streamline workflows, and improve the quality of care. Yet **digital exclusion continues to pose a major barrier**. Around 58% of Europeans over 70 lack basic digital skills, while many low-income households remain disconnected due to their poverty, do not have Internet access. The COVID-19 pandemic underscored how individuals without access to digital tools faced greater risks of isolation, depression, and reduced access to healthcare. For providers, **integrating new technologies is often complicated by regulatory mismatches and system incompatibilities.** Addressing the digital divide

through targeted training, **accessible infrastructure,** and inclusive design is therefore critical for ensuring equitable benefits from digital transformation.

The majority of the "**gerontechnology**"[12] and "age-tech" markets focus on care and healthcare-related technologies, a focus that is often policy-driven. **ICT-based solutions** have become a **necessity in health and social care and related professions**[13]. Although there there is a dearth of research on the adoption of gerontechnology from the perspectives of social caregivers, given that caregivers bear a substantial burden in the form of chronic stress, relevant research[14] in social sciences shows a major problem in adapting to digitisation processes for people with disabilities, especially the elderly, is the **low level of digital literacy and their attitude towards technology**[15],[16]. Digital solutions for elderly people and those with disabilities can significantly enhance social connectedness, reducing isolation and loneliness while complementing traditional care services. Additionally, digitalisation supports people with disabilities in the workplace by enabling them to perform tasks more effectively, access employment through online platforms, and work remotely, providing flexibility and overcoming accessibility barriers in traditional workplaces.[17].

Finally, **digital solutions could have a positive impact on social service providers** and **(in)formal care:**

- They save their time and money
- They can positively impact their quality of life and quality of care
- Improved quality of work (easier and faster exchange of information, time savings, and improved collaboration between staff
- Decrease their burden of care, help them to reconcile care and work
- Increase their peace of mind, reassurance, their well-being and self-efficacy
- They give the feeling that the elderly and persons with disabilities are safe
- They enable better control over one's own life

[12] Huang,Genghua and Ampadu Oteng,Samuel (2023). " Gerontechnology for better elderly care and life quality: a systematic literature review", *European Journal of Ageing*, 20 (1): 27, doi: 10.1007/s10433-023-00776-9.
[13] Mishna, F., Milne, E., Bogo, M., & Pereira, L. F. (2021). Responding to COVID-19: New Trends in Social Workers' Use of Information and Communication Technology. Clinical Social Work Journal, 49(4), 484-494. https://doi.org/10.1007/s10615-020-00780-x
[14] López Peláez A and Marcuello-Servós C (2018). "E-Social work and digital society: reconceptualizing approaches, practices and technologies". *European Journal of Social Work,* 21 (6):801–803.
[15] Huang,Genghua and Ampadu Oteng,Samuel (2023). " Gerontechnology for better elderly care and life quality: a systematic literature review", European Journal of Ageing, 20 (1): 27, doi: 10.1007/s10433-023-00776-9.
[16] European health parliament (2016). *Digital skills for health professionals. Committee on digital skills for health professionals,* URL: https://www.healthparliament.eu/wp-content/uploads/2017/09/Digital-skills-for-health-professionals.pdf . Assessed 21 Dec 2023.
[17] OECD (2016). *New markets and new jobs. 2016 ministerial meeting on the digital economy.*

- They give them a sense of self-efficacy[18],[19], [20], [21], [22]

According to Kaihlanen *et al* research (2023), digitalisation was perceived to have changed social service providers' workday. In addition to these digital examples, *Chapter 5* describes innovative digital solutions as examples of best practices in caring for the elderly and PwD.

4.5. Environmental and Climate-Related Challenges

Environmental change adds another layer of complexity to social care. **Rising energy costs**[23] directly affect the daily lives of elderly people and people with disabilities, many of whom rely on medical equipment and stable heating for health and safety. Energy poverty exacerbates their vulnerability, increasing **risks of poor health** and reduced autonomy. At the same time, there is growing recognition that social services themselves must adapt to sustainability demands. Decarbonising care facilities and creating greener, age-friendly environments, such as dementia-friendly villages, walkable neighbourhoods, and smart homes, are emerging as important innovations. These developments not only advance national and European climate objectives but also foster healthier, more inclusive living conditions for service users.

However, a notable challenge lies in reconciling the environmental implications of care delivery models with sustainability goals. The growing emphasis on home-based care—often considered a more cost-effective and person-centred form of support—also generates a substantial ecological footprint. In Croatia, this is particularly evident in the reliance on geronto-housekeepers who must travel by car to reach clients, due to underdeveloped public transport infrastructure. Addressing this tension between accessibility, affordability, and environmental responsibility remains a critical policy concern.

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[18] Kaihlanen, Anu-Marja *et al*. (2023). "The effects of digitalisation on health and social care work: a qualitative descriptive study of the perceptions of professionals and managers", *BMC Health Services Research Journal* 23: 714, URL: https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-023-09730-y .

[19] Cijan A, Jenič L, Lamovšek A, Stemberger J (2019). "How digitalization changes the workplace". *Dynamic Relation Manag Journal*, 8(1):3–12.

[20] Nadav J, *et al* (2021). "How to implement digital services in a way that they integrate into routine work: qualitative interview study among health and social care professionals", *Journal Med Internet Research*, 23 (12).

[21] Staggers N, Elias BL, Makar E, Alexander GI (2018). "The imperative of solving nurses' usability problems with health information technology". *JONA* 48(4):191–6.

[22] Lapão L (2018). "Digitalization of healthcare: where is the evidence of the impact on healthcare workforce'performance? Building continents of knowledge in oceans of data: the future of co-created ehealth". *IOS Press.* 247:646–50.

[23] UK FUEL POVERTY MONITOR 2021-2022. The hardest hit: Impact of the energy crisis.

4.6. Spatial Exclusion and Rural-Urban Divides

Spatial inequality continues to shape access to care. **Elderly people and people with disabilities living in rural, remote, or island areas[24] face unique challenges,** including limited healthcare facilities, weak transport networks, and poor digital connectivity. These barriers increase **the risk of social isolation,** hinder access to essential services, and exacerbate the digital divide. For providers, delivering services in sparsely populated areas is often **more expensive and logistically challenging.** Digital innovations may help overcome some barriers, but access and literacy gaps mean that rural populations often remain excluded from the benefits of digitalisation.

4.7. Social and Cultural Dynamics

Finally, social and cultural dynamics play a critical role in shaping the social service sector. **Loneliness and social isolation** are growing issues, particularly for elderly people living alone. **Stigma, prejudice, and low awareness** about ageing and disability hinder the creation of inclusive communities.

The profession itself faces a negative public image. Social service work is frequently undervalued, perceived as low-status, and poorly understood. This undermines both recruitment efforts and the recognition of existing staff. At the same time, limited societal awareness of conditions such as dementia hampers early detection and community-based responses. Promoting intergenerational solidarity, raising awareness about inclusion, and enhancing the public recognition of care professions are therefore crucial to building stronger, more resilient social systems.

5. Demand Study: Main Findings of Qualitative Research

The following section outlines the identified **needs and challenges of older adults, persons with disabilities, and the organisations providing care** for these groups in Croatia and Germany, drawing on qualitative research findings. While the two countries differ in terms of social-state systems, legislative frameworks, living conditions, and welfare benefits, the research revealed notable **similarities** in the needs and demands of both service providers and their beneficiaries. To enable a deeper understanding of these conditions and the broader socio-economic position of the target groups, the study developed **personas** - fictionalised profiles that represent sub-groups within the real population. These personas reflect the key characteristics, identities, challenges, barriers, and needs of the beneficiaries, thereby serving as a tool for tailoring solutions (products and/or services) that respond to their specific circumstances. This user-centred approach

[24] Chipp et al. (2008). “Adaptations to Health Care Barriers as Reported by Rural and Urban Providers”, J Health Care Poor Underserved. 19(2): 532–549. doi: 10.1353/hpu.0.0002.

highlights the importance of understanding beneficiary needs as a prerequisite for designing effective and sustainable innovations in care and support services. It is important to note that the **composition of target groups varies** across the two national contexts. In Croatia, social service organisations primarily provide care for older adults, with services focused on in-home support (e.g., home assistance delivered by CPUK and VAL Lastovo organisations). By contrast, in Germany, social service organisations predominantly serve persons with disabilities, offering a wider range of support models, including stationary medical care, ambulatory services, nursing care, family support, assisted living, and outpatient living, as exemplified by the work of Diakonie Krok.[25].

5.1. Challenges and needs of elderly people

We have identified **3 types of personas** that represent elderly people - beneficiaries of care services - in **Croatia**. The main differences differentiating the types of target groups/personas of older adults are: **a) the type of household** and **b) the type** and **distribution of care** for them. This means that there are those elderly people who: **1)** live alone in a **single household** and receive help from an **in-home care** organisation (CPUK and VAL Lastovo), **2)** live alone in a **single household** and their **family members** who live nearby or in the same county are caregivers (sometimes family members are caregivers as well as in-home care organisations); **3)** live with family members (children, spouse) but receive some kind of help and care from in-home care organisations. In addition, the differences between users/people of the elderly depend on: **a)** level of digital literacy **b)** possession of digital devices (mobile phones, smartphones, computers, tablets) c) possession of the Internet and d) having basic living conditions (electricity, water). This means that some users do not own smart devices or the Internet and do not know how to use them due to poor digital literacy. However, some own simple push-button cell phones or even more advanced ones who own smartphones, tablets and PCs. Of course, beneficiaries/elderly persons differ based on **a) educational level, b) socioeconomic position**, **c) level of pension and other financial assistance** from the state concerning their status (if they are entitled to this type of assistance), **d) social capital** and **e) family network** (depending on whether they have family members and where they live - far from them or close to them). It is important to note that these users - elderly people - live in rural areas (on an island or the mainland) with a greater distance from large cities where they have to go for health check-ups, purchases, etc. For this reason, they struggle with the problem of transportation and social interaction, considering that they live in lagging regions and, due to their condition, they are often not mobile enough to go somewhere alone.

[25] This Center offers residential options, ambulatory assisted living, workshops, schools and training.

The research found that the **challenges** that elderly people face in everyday life and their **needs** concerns: loneliness, housing, social interaction, sense of purposefulness, and income/financial assistance. and a safe environment (decent healthcare, basic living conditions, transportation). Elderly people define the need for care as everything that is an obstacle to independent living. Care for elderly people should, therefore, entail **more than health care** alone. To be more precise, based on qualitative research, **elderly people need**:

- **Social interactions and a sense of belonging** (social relationships, day activities and social participation) to raise their sense of purposefulness and reduce loneliness. They usually live alone, feel lonely, socially excluded, and distant from cities and their neighbours/family/friends. Due to the rural and lagging area, their poor mobility, and spatial and social exclusion, they feel very lonely. Social connection and interaction are the most important needs identified among beneficiaries.
- **Satisfied living conditions** and **hot meals** since some live on the edge of poverty (electricity, water, food).
- **Accessible health care.** That is, both islands and rural areas should have adequate health staff (such as visiting nurses for in-home care, doctors, psychologists, and physiotherapists). They have to go to the mainland or bigger cities for doctors and medical examinations, which requires a 30+ km trip one-way. and other health professionals. For this reason, they do not take good care of their health, they do not perform regular tests and health examinations.
- A **transparent care supply** and high-quality care ensuring the following aspects: expertise, decent treatment, on-call 24- 24-hour-per-day care, digital aids for safety and emergency, and reliability, specific attention to a family caregiver(s)
- **Transport.** That means poor transport connections, infrequent sea and public transportation lines, expensive ticket prices and small vehicle seats in social service organisations that drive them as part of operative care.

5.2. Challenges and needs of people with disabilities

People with disabilities are in a disadvantaged position compared to those without disabilities. When analysing the **current social situation** of **people with disabilities,** they are facing the following[26]:

- The real employment situation of people with disabilities is not often reflected as many persons with disabilities might not be registered as unemployed, so the unemployment rate is higher. If they are employed, their workloads, work tempo, and work tasks are often unsuitable given their health conditions.

[26] Disability and Development Report (2018) *Realizing the Sustainable Goals by, for and with persons with disabilities*. United Nations Department of Economic and Social Affairs.

- In most countries, people with disabilities who are employed are more likely to be in vulnerable employment, characterised by inadequate earnings, low productivity and difficult working conditions that undermine workers' fundamental rights.
- People with disabilities face a pay gap and run a significantly higher risk of poverty or social exclusion, leading to a lower quality of life.
- People with disabilities are facing problems in the physical environment and transportation.
- People with disabilities generally experience significantly lower educational levels than people without disabilities. Generally, they experience unstable health conditions that limit their abilities to participate in employment and social activities.
- Women with disabilities are often more disadvantaged than their male counterparts. In addition, multiple vulnerabilities - belonging to a minority, age, gender, and ethnicity affect the unfavourable social position of people with disabilities.
- They face social stigma, i.e. negative or limiting stereotypes, which bring them to social exclusion and marginalisation.

The qualitative research found that **challenges and needs** that people with disabilities in Germany - Diakonie Korks beneficiaries that live in rural areas and receive assisted in-home care as part of ambulatory assisted living - face in everyday life **concerns**: social interaction/participation in terms of loneliness and boredom, sense of belonging, monitored support and assistance but also autonomy, home care digital aids and devices for safety, transportation and financial assistance.

Since the target group sampled within this qualitative research refers to people with disabilities who use **ambulatory assisted** living services, meaning they get care 1-3 times a week for a few hours, it is necessary to describe their **characteristics** in the form of personas. These are people without earning capacity, who live in villages but do have a good level of digital literacy and possess digital devices such as smartphones and PCs. They differ in the type of household, the social network and the type of aids they use.

To be more precise, based on qualitative research, people with disabilities (beneficiaries of Diakonie Kork) need:

- **Social interaction and a sense of belonging**. Among people with disabilities, the basic need that has been identified as a priority relates to loneliness and boredom. They feel lonely and bored and want their everyday life filled with communication, participation and contentment. This problem is also the main one for those who live in rural areas and do not have any social contact or can not go to the local bar or social event because of their disability or mobility problem.

- **Assistance and autonomy**. Beneficiaries need help and assistance for going to the doctor, ordering medical examinations, ordering medicines, going for groceries, assistance for walks and daily activities and social interaction, and someone for help after an epileptic seizure. On the other hand, they need independence - to be independent, at least in certain daily activities that they have to do, based on a digital solution or some additional aid.
- **Home care digital aids for safety.** Assistance and help by aid or some other solution are essential because of their sense of safety and autonomy.
- **Transportation/ Mobility**. There is a need for better transport connections and assistance (they need someone to escort them - that is, social companionship and escort services for the elderly) to be mobile and self-sufficient.
- **Finances.** They require better financial support from the state and some other benefits.

5.3. Challenges and needs of social service providers

The target group of social service providers needs to be analysed as a **heterogeneous group**, especially when comparing the Croatian and Croatian contexts. This means that the caregivers in this research differ by **1) type of organisation**, **2) type of care - informal and formal caregivers** (we have educated experts in terms of health care, geronto-housekeepers and family members as caregivers), **3) level of education** and **digital literacy**. This type of typology and persona characteristics are essential for further project development.

Given that the primary focus of this report is to identify and analyse the needs and challenges faced by social service providers - with the aim of designing, developing, and testing innovative solutions - it is important to highlight a key practical issue related to the implementation of such innovations.

Although various software systems for managing social services already exist, particularly within nursing homes and residential care institutions for older persons, their practical use remains limited. A major barrier lies in the heavy workload and understaffing among caregivers, who often lack the time, resources, or motivation to input data into these systems. Consequently, digital platforms that have already been implemented frequently remain underutilised or contain incomplete data, rendering them ineffective and preventing them from fulfilling their intended purpose. In many cases, staff continue to rely on manual, paper-based processes or only enter information required by law. In this context, the Innoclusion project seeks to address these challenges by introducing and testing an innovative software solution within daily operational settings.

5.3.1. Geronto-housekeepers as in-home caregivers

In the context of in-home care and home care assistance, social service providers in Croatia refer to geronto-housekeepers as a gender-specific job for women, usually of older women who belong to a certain vulnerable group. This type of in-home care consists of cleaning, purchasing food and supplies, accompanying doctors, performing medical examinations, and psychosocial support. Geronto-housekeepers in Croatia, when creating personas, differ mainly in terms of the level of 1) digital literacy 2) education/knowledge about social care and 2) social status. Regarding digitisations, geronto-housekeepers use smartphones, WhatsApp/Viber and email. Thus, their needs mainly concern:

- **Work communication and coordination.** They feel a lot of work overload and emotional/mental overload, so they need some digital solution or re-structuration process of their daily work coordination and organisation. There is a need to relieve the care and responsibility of geronto-housekeepers. Staff planning and work coordination are done manually and physically without using smart technology (They only use WhatsApp/Viber group for communication, which is tiring considering the incomprehensibility of changes and a million notifications).
- **Human resources and finances at the organisational level.** Social service organisations in RoC struggle with a lack of employees, professional staff and geronto-housekeepers. In addition, financial resources, low salaries, and insufficient equipment for work are big problems for them. There is a lack of cooperation with medical and care professionals, especially in rural areas. In Croatia, social services and providers of these services belong to low-paid jobs. Geronto-housekeepers themselves belong to the categories of vulnerable social groups.
- **Education** on raising **digital literacy.** Most of them only have basic or lower levels of digital skills.
- **Education** on communication techniques and providing support to beneficiaries. For instance, some providers - particularly those participating in the “Zaželi” Programme in Croatia - have not received formal education or training in caring for older persons and individuals with disabilities. This gap in professional preparation directly affects the quality and consistency of service provision. A clear need has therefore been identified for targeted education and capacity-building initiatives, especially in areas such as effective communication with service users in stressful or sensitive situations, as well as other training aimed at enhancing the practical skills, knowledge, and competencies required for quality care.
- The need for **sectoral and intersectoral networks** (connection with other organisations, stakeholders, policymakers, and NGOs). Poor peer-to-peer expert connection and no “social service providers” network among organisations, low advocacy and intersectoral cooperation were identified. Considering the

dissatisfaction with state influence, the need for structural changes and improvement was also identified.

5.3.2. Institutional caregivers in Diakonie Kork and Evangelische Altenhilfe St. Georgen

In the German case, we have institutionalised care and the types of care within the Diakonie Kork Center and Evangelische Altenhilfe St. Georgen. The Diakonie Kork centre provides outpatient and inpatient diagnostics and therapy, rehabilitation, research and teaching, and among their beneficiaries - people with disabilities - but also supports those people who do not suffer from epilepsy. This Center offers residential options, ambulatory assisted living, workshops, schools and training. Diakonike Krok has a diverse staff - from medical professionals, caregivers, volunteers, students, etc. On the other hand, Evangelische Altenhilfe St. Georgen gGmbH provides comprehensive elderly care services. They operate three senior care homes offering both long-term and short-term (respite) care. They offer stationary care and home-based care: daytime care services that let seniors spend the day in supportive, engaging company while staying at home overnight or they offer home nursing services. Besides that, the organization also provides neighborhood assistance, meals on wheels, and special programs for people with dementia, ensuring both companionship and relief for caregivers. Alongside these services, they offer individual care consultations, training for family caregivers, and opportunities for social connection such as communal lunches and vacation care programs.

As for the interviewed employees of those organisations, people with different job positions participated - those who use digital technology, those who work directly with people with disabilities in the education and rehabilitation process, and those who deal with digital marketing and public relations at the organisational level. All interviewed employees underwent training and education for care, i.e. they have the necessary expertise in their job description. All interviewed social service providers use PCs, iPads (UK-iPads for people with disabilities with supported communication and using the system), smartphones, digital tools and software (for music, image and video editing), motion composers, and gamified solutions like educational games and game systems for people with disabilities, videos, etc. Although in this case, a greater digitisation in terms of work and care was analysed compared to Croatia, as well as better conditions, the following needs of social service providers were observed:

- **Digitised aids for working with people with disabilities for their autonomy.** Considering the difficulties and disabilities range, social service providers would benefit from user-friendly and simple aids that beneficiaries can use independently without their assistance, which will help them in workshops and education (schools) and in everyday activities and content they offer.

- **Improve organisational communication and work coordination (care administration/ operative care).** Since they feel a lot of work overload and emotional/mental overload, the need to improve communication and coordination of work tasks (documenting care and care administration) is recognised, which means improving staff planning and facilitating everyday tasks through fast and simple digital solutions (such as ordering medicines or writing reports).
- **Lack of human resources and finances** (insufficient workforce and financial resources/funds). Although employees are trained for work, the need to increase the workforce and the need for skilled social service providers is recognised. Also, the need for greater financial resources and system restructuring was recognised among interviewees.
- **Structural change of the social service system.** Although Germany is a developed country, the research interviewees need systematic changes at the national and policy level in the social service sector and care for the people in need.

5.3.3. Family members as caregivers

Lastly, family members (spouses, children, friends, and relatives) are important in caring for people with disabilities and the elderly. In some cases, people in need live in the same household with their informal caregivers (family members), but most often, family members live far away. Regardless of the proximity of the residence, a large burden of care falls on the family member, due to which they feel a great **emotional and physical overload. 24/7 care** and **concern about safety** are mentally demanding to them. For this reason, **releasing this burden** has been identified as a main need for family members as informal caregivers. They do everything for their people in need - finances, medicines, doctors, ordering, shopping, all the administration and the operational part - so they need to relieve that work in a faster way that can be obtained through a digital solution or aid.

5.4. Transnational Comparison: Germany and Croatia

The main difference recognised between beneficiaries (elderly people and people with disabilities) in Croatia and Germany refers to basic living conditions, i.e. socioeconomic position. Beneficiaries in Croatia are living on the edge of poverty and receive significantly less financial aid from the state, which does not cover all basic living expenses and medical care problems (especially on the islands and/or rural areas), unlike in Germany. Therefore, elderly people in Croatia often do not have an Internet connection or even electricity in their homes and adequate healthcare in their residences. Also, the biggest difference can be seen in the possession of smart technology - smartphones, laptops, and tablets. While beneficiaries in Germany have smartphones, PCs and internet

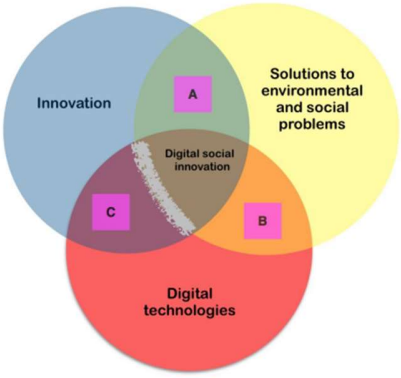
connections, some beneficiaries in Croatia do not have the above. But Croatia also has an identified difference due to the two different regions. More specifically, on the island of Lastovo, most elderly people own smartphones and the Internet in their homes (or even PCs and tablets), while in Međimurje County, hardly anyone has a smartphone or Internet. Still, if they have a phone, then the elders have a simple cell phone with buttons. However, the need for social interaction and participation - content and connection that will reduce their feeling of loneliness and give them meaning and purpose - is the most important need of all beneficiaries - people with disabilities and the elderly - both in Germany and Croatia.

Furthermore, the difference between Germany and Croatia refers to the beneficiaries' and social service providers' digital literacy levels. In contrast, beneficiaries and social service providers in Germany have a much higher level of digital literacy and digital aids already. For the social service provider, the improvement of work coordination and communication was identified as the most important need, with the aim of more up-to-date care administration. For family members, there is a need to relieve the emotional and physical workload.

To conclude, although these are different locations and contexts, especially regarding budget and conditions, some similarities have been identified. Mapped examples of best practice can help us detect certain digital solutions for social interaction, telecare and work coordination, such as staff planning (see below).

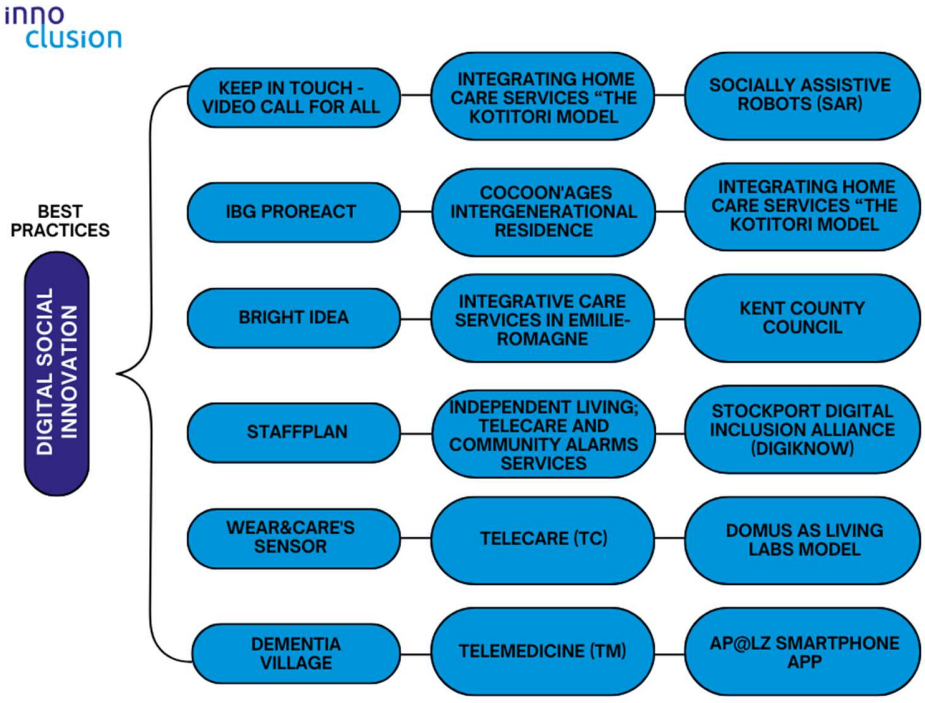
6. Green and Digital Social Innovation

According to the OECD, *social innovation* refers to designing and implementing new solutions that imply conceptual, process, product, or organisational change, aiming to improve individuals' and communities' welfare and well-being. Social innovation aims to tackle the social need and re-design social relations. At the same time, digital social innovation focuses on using digital technologies to co-create knowledge and solutions for social needs, in our case, elderly people, people with disabilities and social service providers.



Infographic 1. Digital Social Innovation

Based on the **identified needs** of social service providers and their beneficiaries, mostly in the segment of the need for social interaction, work coordination, community engagement and integrative care services, below are presented **examples of best practices on a global level.** A more detailed description of each mapped social innovation can be found in ***Appendix I.***



Infographic 2. Mapping Innovative Solutions - an Example of Best Practices

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Appendix I. Mapping Innovative Solutions - an Example of Best Practices

- **Denmark–Advancing Elderly Care**
  - Description: Denmark focuses on supporting the elderly to stay in their homes as long as possible. This includes services such as home care, home physiotherapy and technology interventions with a citizen-centred approach. The goal is for the elderly citizens to maintain their independence, stay in control of their own life, improve their quality of life, and stay healthy in their own homes for as long as possible.
  - ***Innovative Example 1*** "**Keep in touch - video call for all**" is a b-near touch screen, a user-friendly device bridging the tech gap. It's ideal for individuals who find smart devices challenging due to age, cognitive impairment or developmental disabilities. This device is more than a communication tool; it's a conduit for emotional connection. With a unique feature allowing users to control their visibility, it promotes a sense of presence and closeness, even from afar.
  - ***Innovative Example 2*** **"IBG ProReact"** stands for Interactive CitizenGuide and is a digital solution for life management for people with reduced function. The solution consists of a large number of modules and functions for communication and planning in everyday life.
  - Innovative Example 3 "**StaffPlan**" for caregivers and nurses.
  - Innovative Example 4 **"Wear&Care's sensor"** aims to free up resources for caregivers, reduce stress and increase dignity and well-being for the elderly and disabled people.
  - Website: https://healthcaredenmark.dk/national-strongholds/elderly-care/
- **Netherlands – De Hogeweyk, "Dementia Village":**
  - Description: People with dementia live in a controlled but realistic environment that mimics everyday life. Besides the medical staff care, the village has shops, cafes and other facilities.
- **France – Cocoon'Ages intergenerational residence:**
  - Description: The solution for the issues of weakening social relationships, an ageing population and lower purchasing power. Residence with a low carbon content, intergenerational contacts and relationships, social content and adequate care.
  - Website: https://www.habitat-intergenerationnel-cocoonages.fr/
- **Finland – Integrating public and private home care services "the Kotitori model"**
  - Description: Kotitori is a social innovation assisted by technological solutions. The main idea is to provide a "one-stop shop" of public and private home help services with easy access for older people and their relatives. In the model, the City contracts with a private provider, which, in turn, works with public, private, and third-sector providers in order to meet the customer needs in a personalised way. Kotitori focuses on home care and home care support services. A person is entitled to these services if he or she experiences difficulties coping with routine tasks at

home due to illness or reduced functional capacity and if the informal care provided by a spouse or relatives is inadequate. Municipalities are responsible for organising (i.e. funding, providing and commissioning) services for their eligible residents[27].
    - Website: https://stm.fi/en/social-and-health-services
- **Italy – Integrative care services in Emilie-Romagne:**
    - Description: A holistic model that combines different services to provide the elderly with integrated care.
    - Website: https://salute.regione.emilia-romagna.it/
- **Orkney – Independent Living; Telecare and Community Alarms Services**
    - Description: Orkney has become a pioneer in using technology to provide care for the elderly. Technologies such as video consultation, telemedicine and digital technology are used to monitor health parameters.
    - Website: https://www.orkney.gov.uk
- **Welfare technology (WT)** is designed for people with diverse abilities and disabilities and refers to:
    - **Telecare (TC)** - continuous (24/7), automatic and remote monitoring to manage the risks associated with independent living, particularly among older people or those with physical disabilities (e.g., pendant alarms, red buttons, motion sensors or fall detectors)
    - **Telemedicine (TM)** - the remote exchange of physiological data between a patient at home and medical/nursing staff to assist in diagnosis and monitoring (e.g. monitoring vital signs)
    - **Socially assistive robots (SAR)** - assistive technologies developed to assist care staff in long-term care (LTC) facilities. These robots take on the role of social companions and have been shown to reduce loneliness and agitation, improve mood and encourage social interactions with other people.
- **Kent County Council: supporting adults with autism through use of technology**[28]
    - Description: Blended physical and virtual approaches are being adopted by the occupational therapy team in Kent that offers enablement support to adults with autism. In Kent, a lot of people are experimenting with using apps and electronic whiteboards to improve their planning and organisational abilities so they can handle daily chores on their own. It is possible to configure whiteboards and applications to give detailed instructions on how to perform tasks. Prompts can be added remotely by carers or support personnel, they can be written or spoken, and they sync with the person's phone calendar.
- **Video Carephone**
    - Description: Early in the pandemic, the county authorities of Essex, Kent, and Suffolk committed to using more care technology to support individuals getting

[27] See: Hakari *et al* (2012) "Emerald Article: Integrating public and private home care services: the Kotitori model in Tampere, Finland", doi: http://dx.doi.org/10.1108/14769011211270738 .
[28] See: https://www.local.gov.uk/sites/default/files/documents/25.172%20Digital%20innovation%20in%20adult%20social%20care_3.pdf

care in their homes. They discovered a safe tablet called a Video Carephone that allows users to make virtual check-ins with their family, carers, and other authorised providers.

- **Digital Social Care**
  - Description: To help with all things digital, Digital Social Care is a free online resource managed by and for carers. Digital Social Care, supported by NHS Digital, helps adult social care providers navigate the digital landscape. To assist social care organisations in assessing their level of digital readiness and capabilities, a digital self-assessment tool has been created.
  - Website: https://beta.digitisingsocialcare.co.uk
- **Collaborative digital adult social care recruitment**
  - Description: A cooperative digital recruitment campaign, including 14 councils, the local ADASS branch, and West Midlands Employers has contributed to the region's ability to retain a diverse and adaptable social care staff. Three specific campaigns were developed as part of the recruitment strategy for the sector during the first pandemic response: one aimed at luring in former social workers, another at luring in final-year social work students, and the third, which sought to draw in social workers for the West Midlands independent care sector. This was accomplished through targeted digital communications, including social media, partnerships with nearby universities, and digital campaign materials, such as videos and unique campaign websites.
- **Stockport Digital Inclusion Alliance (DigiKnow)**
  - Description: Initially established to facilitate the adoption of digital technology throughout the borough through several initiatives. In locations like community centres or shared living spaces in assisted housing, volunteers would conduct training courses and impart digital skills. Today's support is virtual and geared towards helping those who require assistance with using technology to stay connected and healthy. Through the creation of a digital device lending library, the council has also been assisting those who wish to increase their digital proficiency and confidence but are constrained by the expense of purchasing a device or connecting to the internet.
- **Telehealth in Lincolnshire**
  - Description: The county council has been collaborating with a technology supplier, the local care association, and care facilities throughout Lincolnshire to quickly grow a telehealth pilot project. Basic observations such as blood pressure, temperature, pulse, and oxygen levels can be reviewed and shared with health and care specialists remotely with a basic telehealth kit given to care facilities. The primary care network employees, as well as care professionals from all of the homes, have received training.
- **Collaboration between councils**
  - Description: Based on the idea of "doing once and not 11 times"; all 11 councils in the East of England that are in charge of adult social care have committed to using the same platform to gather and exchange data and intelligence in order to promote a high-quality and long-lasting market. The area called the system they

created PAMMS (Provider Assessment and Market Management Solution), which combines financial and care quality data from 20,000 individuals and over 2,000 contractual suppliers to enable a thorough picture of the care market. With increased CQC ratings, peer benchmarking, less need for multi-agency evaluations, and demonstrable service improvements, providers are also profiting from the strategy.

- **The Innovate Dementia Project** comprises ten partners in four regions of Northwestern Europe (Belgium, Germany, the Netherlands, and the United Kingdom), and they collaborate via more than 25 LLs (living labs) to explore, develop, test, and evaluate innovative, sustainable solutions that consider the socioeconomic challenges linked to ageing and dementia.
- **DOMUS** (Laboratoire de Domotique et informatique Mobile à l'Université de Sherbrooke) in Canada
    - Description: DOMUS operates three variants of the LL concept: a smart apartment on its campus that is controlled by a home automation system enabling short-term studies in technology-rich simulated housing; an LL in an alternative housing unit for people with traumatic brain injury, enabling long-term ecological studies in a technology-rich real house; and the LL at home that can be installed in older adults' places of residence (apartments and houses), enabling long-term ecological studies in a mobile, agile-technology environment.
- **AP@LZ smartphone app**
    - Description: The goals were to optimise their independence in ADLs by compensating for their memory problems, further supporting family caregivers and alleviating their burdens. The AP@LZ works like a personal assistant or organiser and has five main functions, namely appointment reminders, a personal database, a medical database, a list of contacts, and a notepad for jotting down shopping lists.

Since the Innoclusion project intends to test the ***Living Lab Model*** in the context of caring for people with disabilities and the elderly, it should be emphasised that numerous living labs have established a new approach to studying the health, independent living, and well-being of older adults. Depending on the definition, LLs are considered as a methodology for user-driven innovation; "a pragmatic research environment, which openly engages all relevant partners with an emphasis on improving the real-life care of people living with disabilities through the use of economically viable and sustainable innovation"[29]. To our knowledge, there are no best practices for design-driven LLs. The lack of consensus on the practices, methods, tools, and boundaries of LLs raises several obstacles to adopting this approach. Therefore, more LL experiments must integrate both

[29] Bergvall-Kåreborn B, Eriksson C, Ståhlbröst A, Svensson J. A Milieu for Innovation: Defining Living Labs. The 2nd Ispim Innovation Symposium: Simulating Recovery - the Role of Innovation Management; ISPIM'09; December 6-9, 2009; New York. In: Huizingh KRE, Conn S, Torkkeli M, Bitran I. editors. ISPIM Innovation Symposium /12/2009 - 09/12/2009; 2009.

older adults and people with disabilities, their formal and informal caregivers, and all other pertinent stakeholders - what we are planning to do throughout the Innoclusion project.

Appendix II. Living Lab Roadmap

Vision and Goal

The long-term and systemic goal for the social service sector is to transform it into an inclusive, digitally enabled, and sustainable ecosystem that ensures dignity, autonomy, and social participation for elderly people, persons with disabilities, and care providers alike. By addressing their identified needs - ranging from digital inclusion, workforce empowerment, and social connectedness to sustainable and accessible environments - the sector aims to achieve integrated, person-centred, and resilient models of care. Ultimately, this transformation seeks to build a cohesive system that links innovation, policy, and practice, enabling equitable, high-quality care for all members of society.

Living Labs are not just pilot spaces but instruments for systemic change — by linking service providers, beneficiaries, tech/solution providers, local governments, and policy actors in continuous iterations and co-creation.

Roadmap: Phases, Activities and Stakeholders

Below is a phased roadmap. Each phase builds on the previous one, but feedback loops and adaptation are key.

Phase	Objectives / Focus	Core Activities via Living Labs & Stakeholders	Key Stakeholders	Risks & Mitigation

Phase 0: Preparation & Trust Building	Lay the foundation — align expectations, build legitimacy	• Stakeholder mapping & alignment workshops • Internal organisational dialogues (all levels) • Small "listening labs" among beneficiaries to build empathy • Secure seed funding / flexible budget for experiments	Service providers, local autorities, community leaders, beneficiary associations, funders	Overpromising → manage expectations Distrust from staff → start with low-stakes pilots
Phase 1: Pilot & Co-creation	Test small solutions in real settings, get feedback, build momentum	• Living Lab cycles (co-design, prototyping, testing, feedback) • Frequent touchpoints with care staff and beneficiaries • Use identity-based, culturally relevant solutions (e.g. local stories/heritage) • Continuous evaluation (qualitative, conversational) • Share interim results with stakeholders	Tech/start-ups, frontline staff, local volunteers, researchers, policy advisors	Low participation Solution-provider expectations mismatch Technical/legal barriers Digital literacy gaps — do training first

Phase 2: Scaling & Institutional Embedding	Broaden reach, embed innovations into core operations	• Integrate successful pilots into organisational workflows • Expand lab to multiple units/locations • Formalise "innovation units" or roles inside service providers • Co-develop with local government and policy actors • Seek stable funding and legal recognition	Regional governments, national ministries, service provider networks, NGOs, funders	Resistance to change Funding discontinuities Legal/regulatory mismatch Scaling too fast
Phase 3: Systemic Change & Ecosystem Strengthening	Influence policy, foster new actors, replicate across regions	• Use lab insights to influence national frameworks (legal, funding) • Establish or connect with existing competence centre or network of labs • Create platforms for knowledge exchange, training, and sector branding	National government, EU bodies, research institutions, social economy actors	Policy inertia Competing priorities Ecosystem fragility in early stages

• Advocate for laws enabling cross-border testing, digital inclusion
• Nurture start-up pool oriented to social / care innovation

Key Enablers and Principles

1. **Trust & Emotional Connection First**
    - Before pushing tech, invest time in relationships, home visits, and listening.
    - In isolated or small communities, identity and local narratives matter more than generic apps.
2. **Flexible Funding and "Play Money"**
    - Allow some budget for experimentation and adjustments.
    - Don't tie all funding to rigid deliverables too early.
3. **Proper Staffing and Leadership**

- A dedicated, motivated lab manager and small team are needed (not 50% of someone's time).
- The manager should bridge social & tech worlds, and be a "convener."

4. **Simplicity, Local Adaptation, Language**
   - Solutions must be in mother tongue / culturally readable.
   - Keep interfaces minimal, intuitive, avoid foreign-language tools.
   - Identity-based solutions (heritage portals, stories) can motivate deeper adoption.
5. **Legal and Policy Alignment**
   - Anticipate regulatory barriers (health, data, social care laws).
   - Work toward a "legal navigator" or translation layer to help solution providers.
   - Embed labs in policy dialogues so innovations inform reform.
6. **Continuous Learningand Feedback Loops**
   - Use conversational evaluation (home visits, interviews), not just surveys.
   - Show participants that feedback changes the design — enhances trust.
   - Iterate quickly; don't wait for "perfect" versions.
7. **Communication, Branding, and Ecosystem Outreach**
   - Social service providers need stronger marketing / storytelling to attract collaborators and funders.
   - Share success stories, pilot results, learning — so labs are visible.

- Engage universities, innovation hubs, tech communities proactively (don’t wait for them to come).

8. **Inclusive Stakeholder Governance**

   - Engage not just users and tech providers, but local governments, funders, regulators from early stages.

   - Structure co-governance (advisory boards, user councils) to align incentives.