



A European Roadmap for Environments of Ageing

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Foreword

The platform of the Environments of ageing component of the roadmap within the FUTURAGE project has been laid by two 2-day workshop events in Heidelberg (Germany) and Lund (Sweden), including a wide range of scholars from various disciplines, who came from 20 countries from all European regions as well as the U.S. and Japan. In addition, workshop outcomes were presented, discussed and refined at various occasions including a high-level stakeholder meeting at the European Commission level. The documentation is also based on a world-wide scanning and analysis of research plans and activities from different bodies involved in ageing and environment issues. After compilation and an attempt to synthesise the material gathered during the workshops, a draft version was sent to all workshop participants for feedback. Thereafter, the work stream leaders developed a first integrative version of the roadmap and invited a selection of the persons serving as break-out group chairs during the workshops to discuss it further in a face-to-face meeting. This document was then again revised and sent to all workshop participants for final feedback.

We are purposefully not citing any references in this document. The argumentation is, however, underpinned by a substantial body of scientific literature concerning Environments of ageing. The roadmap document is split into three parts. An introductory section (Part A) opens up the importance of the area of environment of ageing. The second section (Part B) unfolds key cross-cutting perspectives critical for the quality and outcome of future research in the area of Environments of ageing, which serve to stimulate new research in the area. In the third section (Part C), a selection of key research themes in the area is spelled-out that deserve more research attention in the future. Both, Parts B and C present general priorities able to drive future research. The concretisation of such priorities in terms of research projects must remain subject to the expertise and creativity of individual researchers and research teams to come.

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Executive Summary

The goal of this document is to spell out the research needs and priorities related to the Environments of ageing component of a European Roadmap for Ageing Research for the next 10-15 years, with the ambition to stimulate a wide range of new projects in this under-researched domain of European ageing science. The core of the research theme Environments of ageing is the improved understanding of the interrelations between ageing persons (P) and their physical-social environments (E) in areas such as home environments, out-of-home environments, and technology and products. Environmental views on ageing must also focus on the question whether such interrelations and outcomes depend on the societal, cultural and/or political context and may therefore be different across Europe. The innovative power of research on Environments of ageing lies in its strong potential to stimulate and drive new interdisciplinary synergies (without neglecting the value of disciplinary approaches), its contextualised image of older adults as being proactive as regards their environments, and its emphasis on end-user orientation and participatory research models (without neglecting scientific rigour and the value of basic and applied research approaches). Based on the active input from approximately 50 senior scientists and early-stage researchers, the document suggests priorities of Environments of ageing research to come in the light of the following cross-cutting perspectives:

- Emphasis on P-E theoretical research rationale and theory development
- Emphasis on diversity of ageing persons and environments
- Emphasis on the life course and environments of future cohorts
- Emphasis on interdisciplinary P-E research and the building of new scientific alliances
- Emphasis on P-E method development and refinement
- Emphasis on early-stage researchers in P-E research areas
- Emphasis on user perspectives and implementation

To illustrate the importance of such cross-cutting perspectives, a range of examples of key P-E research themes of the future are given. Future research needs are spelled out for example regarding the enabling and constraining characteristics of private home environments for the full range of older people, the role and potential of work environments of older individuals, the future of long-term care settings and the multi-faceted importance of transport and technology. Our vision for European research on Environments of ageing is that quality of life of older European citizens in the future will be significantly enhanced via an evidence-based and engaged consideration of the potential of environments supporting healthy and active ageing. Making the best out of environmental potentials is a critical research and implementation means to decrease inequality amongst older citizens within and between European countries.

A. Introduction

Goal of roadmap on Environments of ageing. The goal of this document is to spell out the research needs and priorities related to one key component of a European Roadmap for Ageing Research for the next 10-15 years, that is, the area of Environments of ageing. The ambition with this part of the roadmap is to stimulate a wide range of new projects in this under-researched domain of European ageing science. The document also serves to strongly inform and guide stakeholders, policy-makers and other bodies involved in the unfolding of the 8th Framework Programme of the European Commission, in which issues related to ageing must generally be given explicit attention.

The core of the research theme Environments of ageing is the improved understanding of the interrelations between ageing persons and their physical-social environments (home environments; out-of-home environments; technology and products) including environmental intervention, knowledge translation and implementation. Environmental views on ageing must also focus on the question whether such interrelations and outcomes depend on the societal, cultural and/or political context and may therefore be different in various European countries. It should be noted that even if social dimensions definitely constitute an important facet of research on Environments of ageing, in order to avoid extensive overlaps within FUTURAGE, social dimensions of ageing are mainly addressed in the work-stream focusing on social and economic resources. It is also important to mention that research on Environments of ageing follows a life-course approach and has particular concern for the role of the environment in relation to major transitions during the life span, particularly from mid-adulthood early old age and then to advanced and extreme old age.

Our vision for European research on Environments of ageing is that quality of life of older European citizens in the future will be significantly enhanced via an evidence-based and engaged consideration of the potential of environments supporting healthy and active ageing. Making the best out of environmental potentials is a critical research and implementation means to decrease inequality amongst older citizens within and between European countries.

The innovative power of research on Environments of ageing. Traditionally, research on ageing very much focuses on the ageing individual and population – much less on environments and even less on person-environment (P-E) interactions. Moreover, while interdisciplinary work is an asset and prerequisite for many research strands, research on Environments of ageing is an area requiring interdisciplinary research to an extent as yet seldom seen. Much innovative power is inherent in such approaches, but has not yet been explored in a proactive way – while the FUTURAGE process is one step towards realisation of this kind of potential. For example, interrelations between research on Environments of ageing and bio-gerontology, particularly the neurosciences of ageing, may lead to new insights on whether and how living environments of older adults may impact on brain ageing trajectories. Environments of ageing may also unfold strong synergies with health economics, for example, when it comes to the preventative potential of activity-stimulating versus activity-degrading out-of-home environments. This would also provide for a strong alliance between Environments of ageing and public health research and practice at large. Another area of cross-fertilisation may be seen between environment of ageing research and humanities-informed research on ageing. For example, how older adults are using space and time in and out-of-home is telling us as much about cultural habits, similarities and differences between European countries, and possibly also about historical changes in our societies not the least driven by older adults and their changing needs and behaviour in relation to environments.

Notwithstanding the over-riding importance of interdisciplinarity in the area of Environments of ageing, there continues to be a strong argument for further disciplinary research in this field. For example, geropsychology, a discipline traditionally closely connected with research on Environments of ageing, continues to add much to the understanding of P-E relations as people age. Similarly, occupational therapy research has developed during the recent two decades toward a prime discipline to treat research questions related to Environments of ageing. Similarly, disciplines such as architecture, sociology, geography, besides many others, will continue to make important disciplinary contributions to Environments of ageing research.

The area of Environments of ageing is also a domain *par excellence* to consider the inter-relations between micro and macro levels of analysis, which continue to represent major conceptual and empirical issues in ageing research. One example is the question, whether and how P-E relations in old age are driven by contexts such as urban versus rural environments, various community contexts including deprived neighbourhoods, or country legislation and social policy values at large.

Finally, the issue of Environments of ageing has also critical implications for the consideration and practical treatment of end-of-life issues, because *where* to die is among the crucial ethical challenges of our ageing societies. This is just one example to showcase that the area of Environments of ageing may evolve strong synergies with important streams of ethical discourses within our societies.

In sum, multidisciplinary research on Environments of ageing has the potential to contribute with new conceptual and empirical insights on processes of ageing, help to identify the critical antecedents of desirable outcomes of ageing, and through the findings add to critical challenges related to improving quality of life of older adults all over Europe.

Image of humankind and ageing underlying the Environment of ageing roadmap. The image of human ageing underlying the roadmap on Environments of ageing is one of contextualised older adults, who are strongly influenced by existing environmental circumstances at the home, out-of-home and technology level, which may again be shaped by urban versus rural environments, the diversity of community life and, finally, the political framework of specific countries (e.g., health care system; legislative issues related to housing and public transport etc.). At the same time, current and future cohorts of older adults are constantly and proactively creating, shaping, searching for or avoiding environments, and themselves acting to influence the P-E dynamic interplay along the life course into very old age. In addition, such an image of ageing will counteract the still strong tendency all over Europe to negatively stereotype older adults as well as the negative self-stereotyping of older persons by themselves. Further, the issue of Environments of ageing addresses the range of older adults from those being highly capable to those being very frail.

End-user orientation and participatory research models. While there is a continuous need for basic as well as applied research, in the roadmap on Environments of ageing a strong emphasis is put on end-user perspectives and the need to explicitly focus on knowledge translation and implementation research. There is internationally increasing interest and attention in this area and there are now many best-practice examples of successful user involvement in technical and medical research. An important issue for future research on Environments of ageing is to develop effective and efficient ways to capture and identify user priorities. The extent to which user involvement is considered can and must be influenced by political decision-making and indeed reflect in a sense values of autonomous and democratic action in European societies. A key challenge is to minimise the gap between research evidence and practice, for example, how can we plan housing or transport options based on the latest evidence and at the same time secure fidelity in the implementation process. Consequently, there is a need for the introduction of participatory

research models involving older adults, “real world” settings and stakeholders from the beginning of and throughout the Environments of ageing research process, without losing any of the important strengths and standards of high quality science.

B. Key Cross-Cutting Perspectives

In this section, research priorities representing different but inter-related aspects of Environments of ageing are highlighted, followed by a short description of the rationale behind each. Note that no attempt has been made to rank order the suggested research or priority areas – all are regarded as being of equal value and are worth pursuing in their own right.

B1. Emphasis on theoretical research rationale and theory development

Priorities

- Empirical research projects in the area of Environments of ageing should always be underpinned by a convincing theoretical foundation.
- Investment into the continuous development of theories and the refinement of concepts related to Environments of ageing is necessary and important.
- Cultural issues related to similarities and differences regarding Environments of ageing within and between EU countries should explicitly be incorporated and considered in new theoretical developments concerned with Environments of ageing.
- The consideration of future cohorts is a critical theoretical challenge; that is, theories should incorporate possible and expected aspects and characteristics of environments of future cohorts of older adults.
- It is important to stimulate and further interdisciplinary efforts that allow the advancement of theories on Environments of ageing, including, as a critical component, early-stage researchers, as they are the “P-E theory keepers” of the future.

Rationale. Theories are critical for all fields of ageing research, because their purpose is to answer “why-questions”. In the area of Environments of ageing, such questions include: Why is the interaction between the ageing person and her/his environment important for ageing well? Why is ageing particularly dependent on the complexity of physical, material and social environments? To come to terms with such questions, there is a strong need for continuous conceptual and theoretical development in the area of Environments of ageing. Consequently, future funding should explicitly and purposefully invest into theory elaboration and advancement. Even the understanding of the overarching concept of “environment” needs ongoing refinement and re-definition, not least since new types and elements of environments (e.g. smart home technology, information and communication technology, virtual realities, brain-machine interfaces) are constantly entering the everyday world of ageing. In parallel, traditional environments (such as long-term care institutions) are undergoing dramatic changes (e.g. the increasing number of older residents with cognitive impairments). Such issues must be better mirrored in concepts and theories targeting P-E relations. Theories of the future should also better reflect the culturally driven views on Environments of ageing across Europe, while also recognising issues of globalisation. It should be noted that the concepts aimed to better understand P-E interchange as people age are based on different cultural values across Europe. Conceptual issues related to Environments of ageing should also always be seen within the context of major inequalities relating to cultural-societal differences across Europe and globally. Further, theoretical developments should explicitly incorporate scenarios of Environments of ageing for future cohorts of older people. This issue is linked with the challenge to generate, at the societal and individual level, differentiated images of ageing and reduce negative stereotyping of ageing. In this regard, theories can be critical to avoid overly simplistic views on Environments of ageing, be they too positively or too negatively oriented.

B2. Emphasis on diversity of ageing persons and environments

Priorities

- The pronounced diversity of ageing can convincingly be illustrated with P-E constellations. It is an ongoing and still under-explored task to describe the diversity and heterogeneity inherent in P-E constellations all over Europe.
- There is a need for more cross-national research on Environments of ageing in Europe.
- There is a need for a better conceptual and empirical foundation on what variables should be used to classify P-E relations in order to learn about diversity.
There is a need for more evidence on how different types of urban and/or rural environments shape ageing outcomes (e.g. health, well-being, inclusion/exclusion etc.). There is also a need to go beyond the traditional urban-rural dichotomy and to look at embedded communities – e.g., poor neighbourhoods
- There is a need for more research on the diversity of information technology and virtual environments and their role in driving various outcomes as people age.

Rationale. Research on Environments of ageing can serve a better understanding of diversity and ageing issues, also counteracting the ongoing dominance of a Western world perspective in European ageing research. A combined local diversity by country-differences approach is important and also helps to better understand the different challenges related to various countries and parts of the world, especially across Europe. Such differences appear particularly sharp, when the ageing of persons in specific environments is addressed. This applies, for example, to studies on housing conditions, quality of urban environments, and the provision of assistive devices. Additionally, diversity appears in environments such as retirement communities, long-term care institutions, and prisons (in which a rapidly growing proportion of prisoners now belongs to the older age segment), work places or areas to serve the execution of various leisure activities. Such environmental diversity interacts with diversity at the person level, reflected for instance in gender, the distinction between the third and fourth age, ethnicity, and social class. Diversity also increasingly appears in technological and virtual Environments of ageing. For example, a considerable portion of older adults is now using the Internet for communication and health purposes and installs technological aids in their homes, while another portion does not. Important in terms of diversity are also differences within and between European countries in “green issues” such as air pollution or climate change. In sum, the area of Environments of ageing can significantly enhance the understanding of diversity and ageing issues all over Europe.

B3. Emphasis on the life course and environments of future cohorts

Priorities

- Research in the area of Environments of ageing should adopt a strong life-course perspective, which means reaching beyond the inclusion of “only” older adults into research designs.
- Life-course oriented research in the area of Environments of ageing should strongly consider P-E transitions. A prime example is the transition from work to retirement, which appears as rather different in various European countries.
- Life-course oriented research on Environments of ageing and on age-related P-E transitions is also important for the better understanding of future cohorts of older adults. This is the case, because areas such as housing, workplaces, transport and technology will highly likely undergo profound changes in terms of need and use in future cohorts of older adults.
- Motivated by medical achievements, life-course oriented research on Environments of ageing targeting persons ageing with a disability deserves attention.

Rationale. It is crucial to understand P-E processes within the context of the life course. For example, many decisions taken earlier in life (e.g. residential decisions in middle adulthood) may have strong influence on adaptation late in life. The concept of P-E transitions in adult human development is also important and helpful for future research. Turning points such as transitions from middle adulthood into late adulthood, such as retirement, and from early old age to advanced old age, for example relocation to a sheltered housing facility, all imply major alterations of P-E processes in terms of potentials but also risks. A prime area targeting such transitions with high importance for our societies is the role, which environmental design and optimisation plays for the ageing workforce, that is, Environments of ageing research asks for the contribution of a profound consideration of P-E relations in order to exploit the potential of our ageing workforces in the future – and minimise the risks in terms of both health and economic costs. At another level, transitions from normal cognitive ageing to mild cognitive impairment or dementia create significant changes in P-E relations. Moreover, thanks to the advancement of medical research, many chronic and progressive diseases can now be treated, with positive effects on survival. Such developments result in more people living longer parts of their life with a disability – that is, ageing with a disability is an experience shared by an increasing proportion of the population. We still do not understand enough of such P-E transition processes and their impact on the course of ageing. Research on Environments of ageing can also contribute much to better

the understanding of forthcoming cohorts of older adults. In particular, new cohorts of older people appear with new environmental habits and lifestyles, which will shape the life course at large as people age in the future. Life course and future cohort related P-E research will therefore significantly drive and further the generally important issue of the role of cohort change as a theme of the science of ageing as well as for European societies to come.

B4. Emphasis on interdisciplinary research and the building of new scientific alliances

Priorities

- Higher investment into interdisciplinary research in many areas of Environments of ageing is needed.
- There is a need to develop convincing and sustainable models for new interdisciplinary synergies in the area of Environments of ageing. New alliances have to be spelled out and systematically tested between the area of Environments of ageing and the social and health sciences, bio-gerontology, neurosciences and genetics of ageing.
- It is of great importance to train early-stage researchers for interdisciplinary research on Environments of ageing.

Rationale. The roadmap argues that only an interdisciplinary approach is able to serve a holistic understanding of Environments of ageing. Besides the existing bridges between disciplines such as psychology, architecture, the social sciences and urban studies under the umbrella of research on Environments of ageing, there is also a need for new interdisciplinary liaisons such as with bio-gerontology, neuroscience and health sciences. For example, is there a linkage between brain plasticity and the demand characteristics of spatial arrangements? How can P-E research benefit from interaction with economics and vice versa? Future research on Environments of ageing should exploit such novel, interdisciplinary synergies. A highly important new alliance should be built between the area of housing and public health. A crucial question here is for example: How can environments be designed to engage people in positive health behaviours? Lifestyle change issues must include environmental conditions, which can support or hinder the implementation of preventative measures and health behaviours at large. The vital issue of cognitive decline in old age necessitates a stronger alliance between research on Environments of ageing and cognitive ageing psychology, but also neurosciences at large. For example, we do not possess sufficient knowledge on the stimulating role of the home environment for cognitive

decline trajectories and what kind of brain processes might be involved. In order to develop more knowledge on ageing with a disability, new alliances with medical and health sciences are imperative. Similarly, the possible interdependencies between the objective out-of-home environment, public transport facilities and brain processes in older adults with various degrees of cognitive impairment is far from well-known. Going further, the strongly emerging science of genetics of ageing may profit from collaboration with Environments of ageing (and vice versa).

B5. Emphasis on method development and refinement

Priorities

- Overall in research on ageing, there is a need for incorporation of environmental dimensions and P-E interactions in the instrumentation.
- The roadmap encourages the use of multi-methods, with an emphasis on high quality and scientific rigour.
- There is a need for profound reflection on the issues of representativeness and generalisation. That is, research on Environments of ageing must acknowledge and explore the diversity of P-E dynamics among different groups of older people and across Europe.
- There is an under-utilised potential for researchers to conduct secondary data-analyses and meta-analyses to exploit promising data bases and existing studies.
- Cross-national research deserves methodological attention and funding is also allocated to methodology development, including linguistic and cultural methodology challenges.
- There is a general need to spell out a minimum data-set in terms of environmental data, which should be part of every major study on ageing in Europe.

Rationale. It is an important and ongoing need in the area of Environments of ageing to nurture methodological creativity with quality and scientific rigour. At the societal level, we face global challenges such as profound changes in older people's environments and it is very unlikely that such challenges can be met by one methodology alone. At the scientific level, the development of methods in the area of P-E relations still deserves much investment to achieve a robust high calibre quality comparable to other domains of ageing research. Embracing the value of using different methods, the roadmap asks for a multi-method approach for research on Environments of ageing, allowing for creative use of innovative quantitative, qualitative and mixed methods designs. Most important, novel

combinations of methods and approaches within interdisciplinary and cross-national collaboration are strongly needed. This includes the fact that there is a multitude of different languages and cultures across Europe and research funding must be set aside for linguistic and cultural methodological challenges. Methodological challenges also involve issues of study designs and sampling. One aspect often causing debate is the issue of representation and generalisation, based on a mainly quantitative perspective as concerns methodology. However, since diversity is highly pronounced in ageing and environments across Europe, it is suggested that researchers critically question the dominance of such standpoints. There is a great need to critically discuss what kind of knowledge should be generalised, and what kind of knowledge is needed to describe specific groups of older people or constellations of persons and environments. Given the still existing tendency to mostly ignore the environmental dimension in ageing studies all over Europe, a minimum dataset to capture environmental dimensions is needed. To achieve this goal, scientists in the area of Environments of ageing should develop collaboration with bureaus for national censuses, demographers and principal investigators of survey studies. As to traditional qualitative approaches, researchers need to challenge the fact that the cumulative generation of knowledge based on such studies is weak and quite insufficient. Consequently, the roadmap encourages collaboration between researchers representing different disciplines, methodological traditions and cultures. There is also a huge potential for meta-analysis of existing studies and secondary data analysis platforms – based on quantitative as well as qualitative approaches. For example, synthesis of the evidence base in different research areas of importance for future research on Environments of ageing is necessary for the successful development of forthcoming interventions and implementations.

B6. Emphasis on early-stage researchers

Priorities

- Attractive funding for workshops, summer and winter schools etc. with the goal to further interdisciplinary exchange of early-stage researchers within the area of Environments of ageing is needed.
- There is a strong need to provide funding to implement contents of the area of Environments of ageing in key study areas in the first and second cycles of higher education in a harmonised manner all over Europe.
- Support should be made available to early-stage researchers who have an ambition to change their research focus to develop expertise in the area of Environments of ageing.
- The area of Environments of ageing would profit much from a long-term Ph.D. programme with a strong cross-country interchange component based on a highly competitive application platform.

Rationale. Research on Environments of ageing should become a much stronger “training area” for early-stage researchers from all parts of Europe. Because research on Environments of ageing is a small, although expanding domain of research, early-stage researchers often only have access to their immediate supervisors with the same specialisation. Virtual networks should be developed, but need to be built on face-to-face contacts. This implies that fundraising for travel is needed, and that early-stage researchers have to be supported and trained in doing so. International contacts and collaboration are highly important, but real “European” careers – i.e., working and living in different places for longer periods – often are in conflict with the life stage of early-stage researchers; they often have family obligations that restrict their international mobility. The challenge is to work nationally and at the same time at an international level, for example, staying in the home country, but maintaining an intensive international network. The FLARE programme represents an excellent, already existing model in this regard, but there is a general lack of professional and academic career perspectives in gerontology in European countries. Most important, there is a need to strengthen education on ageing within first and second cycle education programmes, in a wide range of fields such as social sciences, medical and health sciences, and technology. The extent and reason for this lack may differ from country to country, but this aspect generally deserves considerable action. This is also true for the area of Environments of ageing.

B7. Emphasis on user perspectives and implementation

Priorities

- Innovative methods for user involvement should be developed and evaluated in the area of Environments of ageing. This applies to all major facets such as housing, out-of-home environments, transport, and technology research and must particularly consider the heterogeneity of users.
- User perspectives should be embedded all the way from framing the initial research questions through the application to evaluation and implementation.
- An important issue for future research on Environments of ageing is to develop efficient ways to capture and identify user priorities.
- New research on how to develop, test, evaluate and implement interventions in the area of Environments of ageing in the most effective and efficient ways is needed.
- Researchers should strive for systematic improvement of communication and interaction with user groups. Evidence-based models of how to achieve this in the best ways possible are needed.
- Guarantee eligibility for funding of implementation research based on successful EU-funded projects.

Rationale. The roadmap makes translation and implementation an explicit research topic, because the issue of Environments of ageing generally is a research area of great relevance and with much potential for active user involvement. In this context, the term “user” involves end-users (senior citizens) and their organisations as well as public and private stakeholders and politicians. It is particularly important to consider senior citizens as both agents and resources. Moreover, given the importance of a life-course perspective of the roadmap, we cannot only plan for research targeting older people and environments especially designed for senior citizens; we need to apply a “design for all” perspective. Intergenerational aspects (=users from different generations) are important and can be critical for interventions and implementation. There is a great need for synthesis of the evidence bases for the development of interventions involving many different areas and dimensions of the environment, followed by piloting and evaluation prior to implementation.. This implies that the research processes may differ extensively, for example, depending on whether the intended intervention targets the physical environment, aspects of the psychosocial environment, or cultural dynamics. Users are often not interested in the research techniques as such, for example, whether a research project is based on qualitative or quantitative methodology. In order to involve users actively in the research process, it is

more important to discuss methods for how to achieve this. Some disciplines, for example the social and health sciences, lend themselves better to user involvement in research than others, such as genetics or biology. Some technical and medical research may take place without user involvement, but the researchers have the responsibility to consider the importance and significance of the potential benefit of user involvement. There is increasing interest and attention, and there is a growing body of good examples even in technical and medical research. As to research on Environments of ageing, the issue of user involvement is highly relevant but still to a large extent unexplored. As research funding currently is very much driven by politics, the extent to which user involvement is considered can very much be influenced by political decisions, not the least in future calls for funding.

C. Examples of Key Research Themes of the Future

In this section of the roadmap, the emphasis is on exemplification of concrete themes related to Environments of ageing, which deserve more research attention in the future. Such research should include two fundamental directions, i.e., innovative research questions/areas and synthesis of evidence, serving as the base for intervention studies and implementation.

(1) Future research on Environments of ageing needs to generate much more differentiated knowledge than exists today on the **enabling and constraining characteristics of private home environments for the full range of older people**. That is, the full scope of private housing solutions across Europe must be empirically targeted based, for example, on the inclusion of highly competent older adults, adults of various levels of education and income, various constellations of multi-morbidity, physical and cognitive functional loss, frailty and various degrees of disability.

(2) Connected to the former issue is the need for up-to-date evidence concerning the **plethora of roles and meanings of home-like settings for current and future cohorts of older adults**. It could well be, for example, that a technological environment, currently not perceived as home-like (e.g., robotics) may serve the needs of older individuals better in the future than traditional, home-like environments. Therefore, **research connecting housing related research with the issues of technology and cohort dynamics** is highly important.

(3) There is also a strong **need to become much more concrete and specific in research on Environments of ageing**. For example, research on the role of the kitchen may prove to

be very important. At a more general level, the overarching question may be framed like this: Do we know enough about the meaning of specific places as people age and about cohort-related change of the role and function of such specific places?

(4) A critical area for European societies is the **role and potential of work environments of older individuals**. The key question is how the ongoing optimisation of P-E fit at the workplace contributes to the possibilities to be part of the workforce also in advanced age, but also to health-related outcomes and to innovation capacity.

(5) Transport issues are an ever-increasing theme of ageing all over Europe. **Optimal transport plays a critical role for quality of life in old age**. At the same time, ecological risks related to increasing share of older drivers have to be kept in mind. A full plethora of research questions can be derived from this area and, given an already substantial amount of completed previous research, the emphasis on future developments and challenges should gain strong consideration. It is obvious that the **research area of transport also involves a full scope of issues related to technology, for example use of mobility devices**. Consequently, the connection between transport and technology needs much attention.

(6) More research is needed on the **role of virtual environments for current and future cohorts of older adults**. Research should provide an in-depth exploration of the potential of virtual environments for various groups of older people, including frail persons and those with dementia, and also identify the possible risks such as isolation, loneliness or losing contact with the real world at the very end of life.

(7) **Research on institutional/long-term care settings and sheltered/special housing must remain a significant area of research on Environments of ageing**. This research stream must also have a strong connection to health issues and provision of health care and social services, because institutions are increasingly used by older adults with multi-morbidity and frailty. At the same, more research is needed on how the provision of housing options for senior citizens is changing, including studies on the diversity across Europe.

(8) We need more research which adds to the **important connection of environments and public health issues and outcomes**. Key questions include: How can we create environments that optimise physical activity (improving; maintaining; regaining) and social integration and participation? How do we create mobilising environments in urban or rural areas and which types of environmental design are particularly useful for specific groups of older adults?

(9) We need more evidence on how we may **define vulnerable P-E constellations** and how do these shape ageing outcomes. This issue is, of course, closely related to physical and cognitive functioning along the process of ageing and how such aspects operate as facilitators or barriers in designing environments supporting healthy and active ageing. Seen from another vantage point, one may also pose the research question: **What makes places and older people seen as a holistic set resilient, and how can such evidence be used for future planning purposes all over Europe?**

(10) Research on Environments of ageing would benefit from a **stronger input from wide-scale demography research**. As a consequence, national census studies as well as European initiatives (such as the *Eurobarometer* survey) should be complemented with a minimum data-set on environmental dimensions.

Appendix. List of participants

	Family Name	First Name	Institution	E-mail
1.	Abrahamsson	Kenneth	Swedish Council for Working Life and Social Research, Stockholm Sweden	kenneth.abrahamsson@fas.forskning.se
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