



Transdisciplinary forward-looking agenda setting for age-friendly, human centered cities



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ABSTRACT

Cities need to adapt to ageing societies because the average age of inhabitants is increasing rapidly alongside the global trend of urbanisation. Apparent effects on both society and individual livelihoods will continue to increase in the coming decades. Great hopes are projected on technology to support solutions for the ageing society and urban planning. Smart city strategies and the field of ambient assisted living are two concepts sharing the assumption that technology will make our lives more independent, more efficient and safer with a higher quality of life. This paper presents a case study of a participatory foresight project that investigates how transdisciplinary agenda setting through the means of including citizens, experts and stakeholders can provide orientation for long-term planning on the future of ageing in the city. Results enforce the argument that urban governance needs to address additional tasks whilst adapting to challenges arising from ageing societies and urbanisation. Alongside mere technological innovation, human factors gain importance. Future-oriented urban development strategies need to incorporate this fact and should not predominantly be drafted on the paradigm of technological progress.

1. Introduction – ageing societies in an urbanised world

The world's population is ageing rapidly. According to the World Health Organization (WHO, 2011), for the first time in recorded history, people aged 65 and older will outnumber children under the age of five before 2020. By 2050 however, the number of people over 80 is expected to have tripled (UN, 2013). As demographic change is fairly certain, many individuals and societies face multiple challenges over the next decades, especially in developed countries (Rechel et al., 2013). The Lund declaration therefore defined ageing and declining populations as an emerging grand challenge, especially for Europe (Svedin, 2009), as it is commonly feared that demographic disruption may lead to a crisis of social and economic systems (Ney, 2009).

At the same time, another worldwide demographic trend greatly affects society as well as individual livelihoods: urbanisation. In 2007, for the first time in human history, more than half of the world's population lived in cities. Throughout the current century, this trend is projected to continue and by 2050 more than 60 per cent of the population will live in cities (UN, 2010). Cities, as cultural and economic centres, concentrate people, goods and services on the one hand, but on the other they also accumulate health risks and hazards. The WHO (2010) attests to cities playing a major role in the rise of chronic conditions such as heart disease, cancer and diabetes. Causes include mental and physical stress factors such as low air quality, exposure to noise and violence as well as less physical activity or unhealthy dietary patterns. Naturally, older adults are especially prone to most of these risks. Also, the effects of

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climate change such as more frequent and intense heat waves present additional risks to an ageing population, particularly in large metropolitan areas (Harlan & Ruddell 2011). Nevertheless, cities also provide many health-promoting aspects and opportunities, for instance access to the full range of services, and supportive physical and social environments (Galea, Freudenberg, & Vlahov, 2005; Green, 2013). Here, altering physical and social factors of urban environments towards the needs of the elderly may play a major role in fostering their ongoing productive engagement in society, an overlooked, yet major societal resource (Beard & Petitot, 2010; Ruza et al. 2014). Great hopes are projected on technology as a major part to finding solutions to the challenges arising from an ageing society (Cagnin, Amanatidou, & Keenan, 2012; EC, 2013; Mort, Roberts, & Callen, 2012; Östlund, 2004) and urbanisation (Caragliu, Del Bo, & Nukamp, 2011; EC 2012; Graham, 2002; Hollands 2008; Kylii & Fokaides 2015). Such expectations fuel innovation as they influence the allocation of resources towards certain fields that seem promising (Borup, Brown, Konrad, & Van Lente, 2006; van Lente, Spitters, & Peine, 2013). At times, bundled expectations result in the construction of sociotechnical imaginaries – ‘collectively imagined forms of social life and social order reflected in the design and fulfilment of nation-specific scientific and/or technological projects’ (Jasanoff & Kim, 2009 p. 120). As such imaginaries are mostly driven by a closed community of experts, participatory foresight can play an important role in democratising futures by engaging various stakeholders including lay-people in an agenda setting process.

The first section of this paper relates the field of active assisted living (AAL) to urban futures and here especially the smart city concept as examples for technology centred concepts driven by expert’s expectations. In section two and three, we report method and results of a participatory foresight process designed to broaden the construction of such expert driven imaginaries. Section four and five critically discusses method and results to conclude with strength, weaknesses and lessons learned from this case study.

1.1. Techno-futures — expectations and neglected human factors

Especially the field of ‘ambient assisted living’ (AAL) carries the promise to support solutions that will allow people to live independently for longer and provide good care in spite of shrinking health budgets and workforces. The aim: making our lives more independent, more efficient and safer with a higher quality of life. The European Union (EU) alone has therefore allocated approximately €700 million to research and development (R&D) of information and communication technology (ICT)-based solutions for healthy and active ageing under the ‘Ambient Assisted Living Joint Programme’ until 2013, and at least another €300 million will be allocated until 2020 (BMVIT, 2015; EC, 2015). Peine, Faulkner, Jæger, and Moors, 2015 describe a ‘triple win narrative’ in which gerontechnological innovations are expected to serve policy makers, innovators and older people alike, yet realization of such claims so far remaining disappointing.

There are numerous pitfalls when designing technology for older adults (Bechtold & Sotoudeh, 2013; Neven, 2010). These new technological solutions need to correspond to the needs of older customers, but many of the current development approaches tend to build upon negative stereotypes of older persons and therefore risk designing unattractive technology (Peine, Rollwagen, & Neven, 2014). Even though user integration and participation is an accepted approach to improve technological solutions, it has its limits. For instance, as developing lines for assistive technologies often trace back ten or more years, they often do not meet current AAL criteria (Compagna & Kohlbacher, 2014). Participatory user integration in the design process may often be so late, that options for technological alterations become limited at that stage of development. Also, as research and innovation ventures are often closely linked to the market, their focus may lead to biased planning in R & D, e.g. if the customers of gerontechnology are rather retirement homes, hospitals, insurances or relatives than the actual older person, then who’s needs does such a technology really attend to? Various authors recognise the importance of a paradigm shift in design theory and practice towards opening up design processes to various stakeholders, making it a collaborative, human-centred effort (Björgvinsson, Ehn, & Hillgren, 2012; Botero & Hyysalo, 2013; Dym, Agogino, Eris, Frey, & Leifer, 2005; Melles, de Vere, & Misic, 2011; Rowe 1987).

A somewhat similar progression as seen in the AAL discourse can be observed in the smart city discourse. In the past years, the term smart city has been broadened rapidly. Originating in smart home concepts in the 1990s, which mainly focused on automation of buildings, the term was later pushed by companies specialising in urban infrastructure and ICT (Hollands, 2008; Söderström, Paasche, & Klauser, 2014). Today, *smart citification* is the most prominent sociotechnical imaginary of urban development within academia, business and the policy discourse, resulting in the merging and interchangeable use of several overlapping, yet somewhat distinct concepts: sustainable, smart, resilient, low carbon, eco, intelligent cities (de Jong, Joss, Schraven, Zhan, & Weijnen, 2015). Political agendas often apply the term as a buzz word, although a consistent definition is missing and the various existing definitions strongly depend on local context (Neirotti, De Marco, Cacchiono, Mangano, & Scoranno, 2014). Overall, these concepts promise technological solutions to pressing challenges faced by policymakers (Viitanen & Kingston 2014; Gabrys 2014; Taylor-Buck & White 2015). Several authors have described the unilateral focus of the smart city concept, critiquing different facets such as the basic assumption that ICT automatically makes cities ‘more economically prosperous and equal, more efficiently governed and less environmentally wasteful’ Hollands (2014:62). Vanolo (2013) argues that the current smart city discourse shifts power and responsibility of urban governance from politics towards technicians, consultants and private companies, reducing urban development to a single techno-centric vision. Furthermore, Viitanen and Kingston (2014:803) critique that often ‘the underlying principle is to expand the market for new technology products and services to support “green growth” with disregard for their wider impacts.’

There is some consistency in the notion that smart cities can no longer only be measured in terms of dispersion and application of ICT. Here, Hollands (2008) describes an extended context in which ICT is significantly responsible for economic, social and spatial transformations on the one hand, but on its own does not account for a smart city on the other. In fact, human factors become increasingly important, for instance education or engaging inhabitants into the political debate centred on their living space. Paquet (2001) argues that the key factor for the development of *smart communities* is people and how they interact. On the same topic, Coe, Paquet, and Roy, (2001: 92) elaborate that connectivity alone is not sufficient to be *smart*, but rather a mix of social and technological

innovations. Nam and Pardo, (2011:291) offer three dimensions for conceptualising smart cities, i.e. technology, people and institutions, and also specify that '[...] social factors other than smart technologies are central to smart cities.' de Jong et al. (2015) even conclude that social inclusion is a prominent feature within the smart city concept, besides the application of the internet to create new jobs and services. A recent European smart city assessment defined three factors of success for cities becoming smart: (1) having a vision: *'the need and desire to transform the city into a place with a better quality of life'*; (2) people: engaging citizens and relevant stakeholders; (3) process: coordinated management and evaluation (European Parliament, 2014:76–79). Hollands (2014) also places emphasis on the necessary shift away from corporate interest towards a participatory, citizen-based urban development.

Overall, similar developments within the smart city as well as the AAL discourse have clarified the need for a democratisation of both discourses. As many cities claiming to be smart cities are situated within ageing societies, their future-oriented urban development strategies, which are often synonymous with smartification, need to reflect societal needs, and especially those of the elderly. Such broadened urban planning strategies urge for meaningful engagement of the public.

1.2. The role of participatory foresight

Being rooted in action research, participatory futures research has been part of practitioners toolboxes since the 1960's, yet only gained momentum during the 1980's and 90's (Popp, 2013). Here, especially urban planners were among the first to adopt and develop participatory processes, often focussing on visioning exercises (List, 2006). With the participatory turn in science in the 1990s, public engagement (PE) activities had become acceptable to broaden the basis of decision-making (Jasanoff, 2003). Many PE methods concerning science, technology and innovation issues were developed, although impact on actual decision-making and effectiveness remained somewhat unclear (Abelson et al., 2003; Pieczka & Escobar, 2013; Rowe & Frewer, 2000). Widespread criticism includes the lack of meaningful transfer of PE results to the policy arena (e.g. Goodin & Dryzek, 2006; Irwin, Jensen, & Jones, 2013; Rask 2013) and the lateness of dialogue. Here, recent concepts such as Responsible Research and Innovation (RRI) or upstream engagement demand early involvement of stakeholders and the general public in the innovation process to stimulate innovations that are socially accepted and supported (e.g. Escobar 2013; Hagendijk & Irwin, 2006; Owen, Macnaghten, & Stilgoe, 2012; Pidgeon & Rogers-Hayden, 2007). Within the discussion on public participation in science, the *deficit model* is a reoccurring theme (Bauer, 2009; Durant 1999; Sturgis & Allum, 2004) and has survived decades of critique (Meyer, 2016). Many public engagement methods are built upon this model, resulting in processes that have their starting point in *educating* lay-participants towards *understanding* complex scientific issues in order to allow an informed dialogue. This poses manifold challenges with regard to how and what information is provided. An additional challenge emerges when prospective studies are applied to grasp possible future developments. Results of studies on the future are often controversial, divergent or even contradictory, and as a result become contested (Grunwald, 2014). In addition, expert anticipation beyond short-term prediction is highly arbitrary since technological innovation in complex socio-technical systems is rapid at present and sometimes results in unforeseeable results and conflicts. For instance, the accuracy of technological forecasts significantly decreases with increasing time horizons (Fye et al., 2013).

Participatory foresight offers some relief to these challenges as Nikolova, (2014) states that *"wider inclusion of agents, which are external for the foresight realm, has constantly been pointed out as crucial for the overall success of any foresight initiative."* As stakeholder engagement has developed into a regular feature in futures studies (Könnölä, Scapolo, Desruelle, & Mu, 2011; Miles, 2011), engaging lay-people in addition to experts and stakeholders may offer additional robust insights, especially when aiming for needs-based innovation or governance. Here, several recent examples of citizen-based participatory foresight can be observed e.g. in the fields of design, urban planning or technology assessment (Author, 2012; Eames & Egmore, 2011; Guillo, 2013; Heidingsfelder et al., 2015). Engaging the public alongside experts and stakeholders allows for eliciting different types of knowledge: cognitive, experiential and value-based. Glicken (2000) defines cognitive knowledge as based on individual expertise (of experts and stakeholders), experiential knowledge on common sense as well as personal experience, and value-based knowledge as moral or normative and intrinsic to a respective society. Here, experiential or practical knowledge of lay persons is highly relevant for complementing the other types in decision-making processes in science and technology (Fischer, 2000; Wynne, 1996).

This is especially important, when aiming for demand-side policies. These require a shared vision on the part of purchasers and suppliers (Georghiou & Harper, 2011). Collective visioning activities fulfill several functions, such as empowerment, capacity building, creating ownership, as well as developing accountability, but mainly they are needed because *'positive visions about our societies' future are an influential, if not indispensable, stimulus for change'* (Wiek & Iwaniec, 2013). Exploring alternative futures to open up narrow, expertise driven pathways is therefore one of the major functions of participatory futures studies (Constanza, 2000; Nikolova, 2014; Popp, 2013), overall aiming at providing *'new knowledge for better understanding of issues and of their future implications and challenges'* (Könnölä et al., 2011). Against this background, it is beneficial to take starting point at asking how long-term futures *should look like*, instead of merely providing descriptive, but often deterministic or linear models of the socio-technical change. Such a normative approach may then serve as a stimulant for contemporary discourse on governing urban planning and innovations in an active manner.

1.2.1. A regional participatory foresight study to broaden future-oriented urban planning strategies

As smart cityfication has become a very popular buzzword within city governments' rhetoric and actions throughout the world (de Jong et al., 2015), it strikes as little surprising that the City of Vienna (Austria) also decided to engage a smart city programme over the last years. This initiative has resulted in a framework strategy that proposes to engage comprehensive innovation to ensure highest quality of life whilst minimising consumption of resources (City of Vienna, 2015). At the same time, during the next three decades, people aged 75 and over are the fastest growing section of the population with a projected increase of 96 per cent in the City

of Vienna. Also the ‘young elderly’, aged 60–74 years, are estimated to increase by 26 per cent (City of Vienna, 2014). Overall, there are similar patterns in many cities around the globe. Whilst governments and businesses increasingly push towards smart citification, city development should not overlook the importance of social and organisational innovations. Especially, as already distinctive limitations to (technological) smart city innovation have become evident (Taylor-Buck & While 2015). Future city strategies need to incorporate this fact and cannot exclusively be drafted on the paradigm of technological progress. Here, participatory, collaborative governance may contribute to finding viable solutions for building age friendly communities (Lui, Everingham, Warburton, Cuthill, & Bartlett, 2009; Buffel, Phillipson, & Scharf, 2012). Especially, since collaborative participation practices successfully address the dilemma of participants in need to choose between the collective and individual interest: *“In these dialogues the effort to meet individual interests produces a collective interest, unlike the pluralist model, where individual interests are packaged without being integrated (Innes & Booher 2004)”*.

Against this background, the introduced participatory foresight study CIVISTI-AAL (Citizen Visions on Science, Technology and Innovation – Ambient Assisted Living.¹) cross-linked knowledge of citizens, experts and stakeholders to include a wide variety of perspectives, rationalities and values on the topic of future ageing in the city of Vienna. Making implicit knowledge of citizens visible and explicit, the process aimed at broadening the agenda setting process by identifying additional and alternative futures to contribute to long-term planning of urban socio-technical systems. Consequently, social and cultural contexts of assistive technologies and (smart-) city services can additionally be considered during planning, development and implementation. Results aimed at inspiring decision makers who seek socially robust, sustainable solutions in R & D policy, technology development, city planning and administration.

2. Method

The method described in this paper is based on the participatory foresight method CIVISTI. An interdisciplinary EU-project consortium, led by the Danish Board of Technology, originally developed and tested the method between 2008 and 2011. During this time, the consortium conducted a parallel process in seven countries; creating recommendations for EU R & D policy of the European Commission, namely the 8th framework programme Horizon 2020 (Author et al., 2012; CIVISTI, 2008). Since then, several adaptations to international, national and regional level took place (Gudowsky et al., 2017), for instance a national study on the future of food for the Austrian Agency of Health and Food Safety (Gudowsky et al., 2015a). The most recent adaptations to – again – European R & D policy are conducted within two ongoing EU-projects² The scope of the method can be summarised as follows: *‘The CIVISTI method is based upon the idea that the process of defining relevant and forward-looking research and innovation agendas could, in many respects, be improved by including consultations with citizens in their development. The method uses citizens’ concerns about societal development as a stepping stone for developing priorities in research programmes’ (Engage 2020:34).*

The method does not extrapolate the current status to find out what the future might look like. It rather cross-links lay persons’ hopes and fears as well as social norms and values with stakeholders’ and experts’ knowledge to answer what the future *should* look like. The method was mapped as one of the most innovative engagement methods for responsible governance of innovation, being able to contribute to systemic change, for instance by addressing societal challenges, or by building new concepts and competencies (Rask et al., 2016).

Within the case study we introduce in this paper – CIVISTI-AAL – a consortium consisting of researchers of the Institute of Technology Assessment of the Austrian Academy of Sciences and a consultancy specialised in AAL (Innovendo.eu) adapted and applied the CIVISTI method. For the first time, the CIVISTI method was adapted and applied to a local context, namely the city of Vienna and to the specific topic of ‘autonomous living of older adults’ between 2013 and 2014 (Gudowsky et al., 2015a; Gudowsky et al., 2015b; Gudowsky et al., 2014). Funded under the smart city call of the Vienna Business Agency (ZIT), a fund by the city of Vienna, the study aimed at giving city planners and technology developer’s insights into citizens’ needs with regard to challenges arising during times of demographic change. Here, several process innovations were integrated, with the aim to improve the cross-linking of different types of knowledge and communicating results.

The method relied on six steps (see figure one):

- (1) *Citizensvisions workshop*: Initially, 50 citizens (lay people) produced ten visions of a desirable future in 30–40 years, which can be based upon hopes and dreams, but also upon concerns and fears. The group of citizens is chosen according to standardised criteria (age, education, gender) to achieve a composition of maximum heterogeneity. Persons with any form of professional affiliation to the topic are excluded from the visioning process, they may take part later when stakeholder and experts are engaged. Citizens formulate their visions during facilitated group work but without any prior information on the topic. Furthermore, the method attempts to strip feasibility thinking from the creative process so that citizens are able to build visions according to their needs.
- (2) *Analysis of visions*: the interdisciplinary project team extracted topics and needs in visions in a qualitative content analysis. Combining a bottom up approach based with a complementary top down comparison with the human rights charta of the European Union, the project team built a glossary of topics. The content analysis, which was used for a network analysis using the

¹ CIVISTI, 2015 was the official name the study was funded under, yet for communication reasons with regard to recruiting for and conducting the public engagement process, the title was adapted to *Life2050-Autonomous living in Vienna*.

² (1) CIMULACT, 2015 – Citizen and Multi-actor engagement on Horizon 2020, 2015–2017, led by Danish Board of Technology, www.cimulact.eu, see also Author (2016). (2) CASI – Public Participation in Developing a Common Framework for Assessment and Management of Sustainable Innovation, 2014–2017, led by Applied Research and Communications Fund, Bulgaria www.casi2020.eu.

network analysis tool Pajek (Bataglj & Mrvar, 1998), aimed at illustrating various interrelations between topics. In preparation of the expert/stakeholder workshop, several semi-structured individual as well as group interviews were conducted in which experts were confronted with visions and their respective analysis. In turn, the experts were asked to identify starting points for the implementation of ideas within the visions. This allowed the project team to collect more than sixty draft recommendations which provided input for the expert/stakeholder workshop alongside the original visions and analysis.

- (3) *Experts and stakeholder workshop*: a highly interdisciplinary group of 13 experts and stakeholders prioritised and elaborated the draft recommendations, while being repeatedly reminded of the visions and their analysis. As a result, they produced 20 recommendations for research, development and urban planning.
- (4) *Crosslinking visions and recommendations*: This step is a process innovation regarding the CIVISTI method. As a new communication tool to facilitate the uptake of results, citizens visions and experts recommendations were combined in a newsletter from the future. Looking back from the year 2050, nine articles – structured as interviews – describe how ideas found in the citizens visions may have been implemented by means of the recommendations given by the experts and stakeholders. In this step, the project team takes on responsibility to on the one hand keep as much of the original texts as possible to ensure transparency and on the other hand produce newsletter articles that are readable and accessible to a wider audience. The interview format was chosen, as this allows for keeping many original formulations as well as providing a text in direct speech answering to challenges stated by the questions the fictional interviewer asked. This was aimed at providing accessibility in terms of inviting the reader to i.e. start to read in the middle or skip passages.
- (5) *Internal review and prioritisation*: Cross-linked results are presented to all participants of the process for validation. The initial citizens then review and assess the recommendations to ensure internal legitimacy before they are presented to decision makers and the public. Within this phase participants have the chance to provide their opinion on the newsletter articles, providing comments to questions such as: Do the articles still reflect what you aimed for while producing the visions? After comments of this review were integrated into the newsletter, the same tool for prioritisation was used as for step (6).
- (6) *External prioritisation*: This step was another process innovation with regard to the CIVISTI method. Finally, an online voting phase on the nine newsletter articles included an interested public who prioritised results, thereby opening up the process to increase external legitimacy. The voting mechanism was deliberately simple to ensure that barriers to participation were low; registration and signing in were not required. Voters were asked to evaluate the newsletter articles in terms of desirability: ‘Which ideas do you support? Each article describes a partial state of the future, be inspired and chose 1–3 topics which you would like to implement.’³ To prevent the casting of multiple votes, every vote was automatically logged with a timestamp and IP address for later assessment. The purpose of the external prioritisation was twofold: increasing external legitimacy of the project’s outcomes by asking for an prioritisation regarding desirability as well as thereby increasing the results visibility.

Additionally, a steering committee consisting of twelve city and federal officials, scientists as well as business representatives was set up to ensure results reached appropriate channels. The committee provided structural support in the form of assisting with selecting rooms for workshops or hosting presentations with results. Nevertheless, the project team remained independent regarding all decisions. An external evaluator monitored the quality of the entire process attending all major workshops, and collecting participants’ opinions before and after the respective event via short interviews and standardised questionnaires.

3. Results

This section illustrates some of the manifold results of the presented study, including the citizens’ visions, their assessment as well as experts’ recommendations, and finally the synthesis – the newsletter from the future – along with its public prioritisation through the online voting. We selected the presented results to illustrate the flow of information from a vision through two of its respective recommendations into a corresponding newsletter from the future article. At the end of this section, results of the public online voting on the newsletter are presented, providing an overview on the interested public’s prioritisation.

3.1. Citizens’ visions on desirable ageing

The first result of the process was the vision catalogue with ten visions. The detailed results can be found on the website of the project⁴ Overall, a qualitative content analysis found more than 100 topics within the visions. The network in Fig. 1 shows how different topics interrelate to each other. The ten visions are seen as a package illustrating the most central topics. The size of the nodes is proportional to how often this topic was mentioned within the visions. The relationship between two nodes (e.g. *integration* and *new working models*) indicates that these two topics were mentioned together in at least one vision. The thickness of the line indicates the amount of visions in which the two topics co-occurred. The size of the nodes is proportional to the quantity of the topic mentioned in all visions.

In the centre of the network, we can identify a conglomerate of highly interrelated and frequently mentioned topics amongst different visions. *Integration*, *new educational models*, *new working models*, *exchange between different groups*, *long-term structural changes*, and *well-being and quality of living* were identified as the six most frequent topics.

³ <http://www.leben2050.at/abstimmung.php>, Life2050 voting page [accessed 20.4.2017]

⁴ <http://leben2050.at>, [last accessed 20.4.2017], German website of the CIVISTI-AAL project.

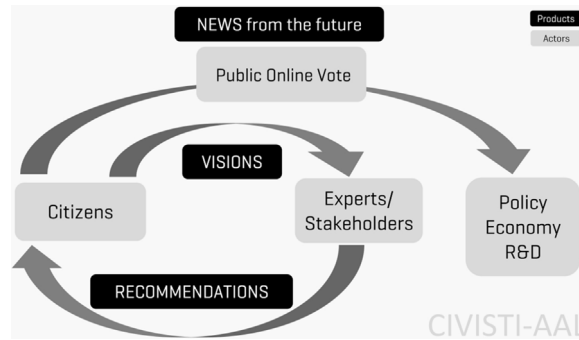


Fig. 1. Overview of the CIVISTI-AAL process: experts and stakeholders transform citizens' visions of desirable futures into policy advice for mid- and long-term planning (Author & Author, 2015).

3.1.1. Exemplary vision

Citizens were free to create visions according to their ideas and needs; the only constraint, however, was structural rigidity because of obligatory prompting questions within a given template (in bold). This structure supported the recording of deliberations as every vision was the result of several group exercises and feedback loops. Here, an exemplary vision shall illustrate structure and extent of elaboration. At first sight, the vision '*Mobility – barrier-free movement on all levels*' describes a classic topic for city planning, but set within the context of the ageing society, it does not refer to the apparent relationship of physical mobility and accessibility. Furthermore, the vision extends the concept to the levels of intellectual and communicative mobility, thus including all generations.

Vision title: Mobility, barrier-free movement at all levels – physical, mental and communicative mobility at all levels and for all generations.

Short description: Nearby living environment ('neighborhood') that promotes physical, mental and communicative mobility:

- No barrier for people with disabilities (wheelchair, walker, stroller, ...)
- [Enable] social communication (for age, culture, origin, intergenerational dialogue)
- Form a community = mutual assistance for child care, care during illness, 'swap-meets', bulletin boards
- Communication centres = village square, fountains, public space without the imperative to consume
- Connection to the public transport network, less individual traffic
- 'Conveyor belt' for locomotion within the residential environment (e.g. conveyor belt at the airport)

What is the core message of your vision?

Enabling physical, mental and communicative mobility by creating largely barrier-free living quarters and surroundings.

What are the benefits and advantages associated with your vision?

Promoting social, generation-overlapping cooperation. Empathise with the lives of other people (e.g. 'Dialogue in the Dark', wheelchair for 1 day, 'GERT').

Sustainability [achieved] through the mobility concept (less individual traffic) and less energy consumption through short distances, but also through mutual support in life together.

What could be a negative impact of this development?

Technology restricts mobility, interest-orientated progress is the focus.

Ghettoisation: if there is not a good mix of young and old, rich and poor in the living quarter. New communication technology may push back personal contacts.

Who would suffer from the negative consequences?

Self-imposed isolation and anonymity is difficult.

People who are unable to fully use or are not satisfied with new technologies and therefore become or feel excluded.

3.2. Exemplary recommendations

A recommendation can be based upon one idea in a vision or it can be based on a meta topic found in several visions. As a single vision contained nine to ten topics on average, not all aspects that were mentioned can later be found in a respective recommendation. As an example, this section presents two recommendations that derived from the vision introduced above as well as other visions. Again, a certain structure was provided in order to help experts create recommendations (in bold).

Recommendation 1:

Title: Meeting spaces as spaces for movement

Recommendation: Meeting spaces are designed as spaces for movement: games, fun and pleasure motivate and encourage movement at all ages. This can be supported by technology. Exercise as part of everyday activities can take place at any age, leading to health and well-being and creates awareness with regard to movement and mobility. Sport is used as driver for integration. Exercise programmes are interdisciplinary, multi-professional and also open to people with disabilities.

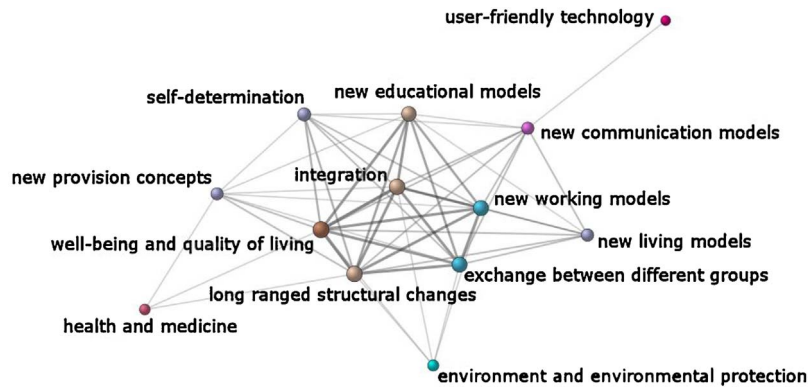


Fig. 2. The network shows the interdependencies of the most abundant topics found in the ten visions.

What are the challenges/problems that need to be addressed?

Exercise is an important driver for health and well-being at any age, but currently often unavailable or not possible. Examples of problems: musculoskeletal disorders, obesity, mental illness.

Recommendation 2:

Title: Boundless urban planning

Recommendation: The Vienna City Administration may set up decision-making bodies including municipalities, districts and provinces to ensure cross-regional development cooperation for e.g. public transport, social and health sectors.

The city's mobility concept shall provide unrestricted and effective locomotion for all citizens and visitors through e.g. a nationwide network, around-the-clock availability, affordability, integration of the city's surrounding area.

What are the challenges/problems that need to be addressed?

Federalist barriers.

The two selected recommendations 'Meeting spaces as spaces for movement' and 'Boundless urban planning' address the topic of accessibility mentioned in the vision in different ways. In the first, physical activity is suggested to promote a reduction in intergenerational barriers and to foster integration. In the Viennese context, 'integration' mainly refers to integrating people with migratory backgrounds. In addition to such reference, this recommendation addresses inclusion in a broader sense – of the elderly and people with special needs. The second recommendation mainly highlights accessible, efficient and affordable transportation within and beyond city limits. Even if equipped with a well extended public transport system, in Vienna busses, tramways and car sharing offers often stop at city limits resulting in surrounding municipalities within the urban catchment being poorly linked to the public transportation network.

3.3. Identified needs-based priorities for broadening future oriented urban planning strategies

Looking back from the year 2050, the fictional newsletter describes how ideas found in the citizens' visions may have been implemented by means of the recommendations given by the experts and stakeholders. Every newsletter article was written as an interview to improve accessibility and readability of the depicted futures. Every article has a short description, followed by an interview, two to four pages in length, focussing on a certain topic. Nevertheless, content between articles overlaps because certain meta topics – such as intergenerational knowledge exchange – were inherent to many visions as well as recommendations (see also Fig. 2). Similar to the mode of creating recommendations, every article is based upon several visions and recommendations, respectively. The following section presents identified needs-based priorities for broadening future oriented urban planning strategies.⁵

(1) From a job market towards a market of activities

In 2050, the former labour market has transformed into an 'activity market'. Basic financial support (security benefits) allows all citizens to participate in and contribute to society in a meaningful way. As a result, this upgraded image and improved quality of support and care for the elderly.

(2) Dialogue between generations creates knowledge

The "Learning by Encounter" programme was developed in 2020 to promote the exchange of knowledge and experience between

⁵ The original 'newsletter from the future' text is available in German on the projects website: <http://www.leben2050.at/abstimmung.php>, accessed 19.11.2016; translation by the authors.

generations. In this future, city-centred meeting places are created to foster the exchange of knowledge and experience between generations. Learning is self-determined.

(3) Committing to a life full of vitality

Vitality is the prerequisite for self-determined living in all stages of life. The city and its inhabitants are spending more resources — such as time, knowledge and money —targeted to promotion of health and preventive measures. Vitality is thus more than just health or absence of disease. There is much room for social commitment, personal development, education and culture.

(4) Together, we move more

In 2050, Vienna benefits from the intergenerational exchange. New meeting spaces and common sports activities bring people closer together. Burn-out and stress are largely a thing of the past. All benefit from a newly created community feeling, while at the same time valuing the protection of privacy and options to retreat highly.

(5) Back to the future of handcraft

Experienced craftsmen teach new and old craftsmanship in the joint workshops of the city's newly created centre for handcraft in a multilingual environment. Hereby, apprentices, students and technicians learn through interactive and intergenerational exchange from which mutual benefits arise.

(6) Free-thinking – boundless city

In 2050, accessibility means that not only mobility obstacles but also communication barriers are removed. The *joie de vivre* in the city has risen, as shorter paths, more public connections and mutual support in intergenerational life have facilitated cooperation and communal life.

(7) Included and integrated

In the year 2050, peoples' needs and the appreciation of their personal competencies are in focus. Constructive coexistence means that each person contributes to society with his/her strengths, regardless of age, origin, mother tongue or special needs. For example, immigration is understood not only as a necessity, but as a real enrichment. Meeting spaces and learning programmes facilitate the integration and inclusion of new and old Viennese people of all ages. All sides benefit from this.

(8) The future always in sight

Vienna does not only live in the here and now, but thinks in larger periods. Creative solutions and comprehensive social, economic and ecological quality standards ensure high standard of living for today's as well as tomorrow's Vienna.

(9) Discover the city of languages

Multilingualism allows for open-minded cooperation and communal life in the city. Common education overcomes language boundaries and brings generations closer together. Targeted city planning effectively mixes cultures and population within the city's districts.

To illustrate how the idea of accessibility – as understood in the exemplary vision and recommendations mentioned above – was moulded into the final newsletter, an excerpt is provided, containing a short description as well as the first interview question and its answer.

Exemplary newsletter article:

Title: Free-thinking, boundless city.

Short description: In 2050, accessibility means that not only barriers to mobility, but also communication barriers are dismantled. Joy of living has increased in the city because cooperation and communication was improved by shortening routes, more public connections and mutual support in intergenerational life.

This is an interview with the two founders of the initiative 'Make way at all levels', supported by the city's Competence Centre for Quality of Life.

Question: In 2013, you founded your initiative. At that time it was still called 'Mobility, barrier-free movement at all levels'. What did you want to achieve in Vienna?

Answer: In addition to the many obstacles within the living environment and the city at that time, there were also communication barriers between generations and hurdles which massively hindered preserving intellectual flexibility up to old age. Our goal was to break down these barriers at all levels and for all generations. At that, accessibility should not only refer to mobility, the physical movement from A to B. But for us, mental flexibility and communicative integration into the community are just as important key elements for comprehensive accessibility. Generally speaking, we wanted to promote social, intergenerational cooperation. We also

Table 1
Newsletter topics and voting results.

Position	Newsletter topics	Voting result (in% of total votes)
1	From a job market towards a market of activities	17%
2	Dialogue between generations creates knowledge	15.5%
3	Committing to a life full of vitality	12.9%
4	Together, we move more	12.5%
5	Back to the future of handcraft	10.2%
6	Free-thinking – boundless city	9.6%
7	Included and integrated	8.8%
8	The future always in sight	7.4%
9	Discover the city of languages	6.1%

work closely with the city's programme 'Learning by meeting' and the action plan 'Generations in motion'. [...] ⁶

This first question and the short description summarise topics that are subsequently discussed further and illustrated with examples during the remainder of the interview. All interviewees within the newsletter are employees of the fictional Viennese *Competence Centre for Quality of Life* which was founded in 2020. Creating this centre was a necessary step to facilitate communication results by meeting recurring questions during internal review, i.e. questions such as which actors would implement the recommendations or who would foster cross-sectional cooperation. Nevertheless, creating a new organisation is only one solution to tend to these questions of responsibility; other possible actors could include the voluntary sector, NGO's, businesses or national governments.

3.3.1. Results of public online prioritisation

The online voting aimed at making results more visible, refining them with respect to adding the opinion of an interested public. During a three-month period, May to August 2014, the voting mechanism on the project's website collected more than 500 votes, consisting of the top three choices of newsletter articles of each voter. After the voting, newsletter articles were ranked according to the overall amount of votes received. For details, see [Table 1](#).

Votes were split relatively evenly as the top position, '*From a job market towards a market of activities*', obtained 17 per cent of total votes; the second highest, '*Dialogue between generations creates knowledge*', 15 per cent of the votes, with the third topic, '*Committing to a life full of vitality*', almost 13 per cent. Subsequent topics positioned fourth, fifth and sixth obtained between ten and 13 per cent. Still, six per cent of voters chose an article ranked last in terms of prioritisation.

4. Discussion

Urban autonomous ageing Results from the network analysis of topics within the visions indicate that technology was not a major concern for participating citizens. Technology is inherent to some of the visions and is interconnected to topics such as new work or communication models; user-friendliness is also explicitly and implicitly mentioned. But in their view, autonomous living at old age is a far more complex matter where especially social as well as organisational issues have much greater importance and where technology is, if at all mentioned, a support and not a solution. Results also show that increased and facilitated intergenerational dialogue is frequently recurring theme. All participating actor groups saw this as an important aspect to ensure social cohesion as well as knowledge transfer. This coincides with increasing calls for extending future city strategies by giving more attention to human factors.

The top two newsletter articles both integrated cross-sectional topics relevant to many visions, which is an interesting result as both topics clearly relate to the already mentioned high potential of resources older adults represent for the job market. Several opportunities for society arise through healthy and active ageing ([Rechel et al., 2013](#)). Here, especially '*From a job market towards a market of activities*', which received the most votes, depicts a future in which meaningful participation in society is possible at every age. A basic financial security allowance covers basic needs and allows for an active engagement in desired work or other activities. That this topic was prioritised by voters may indicate current growing concerns on the security of pensions and related fears of poverty at old age. Here, relative poverty as well as income inequality are major factors impacting longevity of the elderly ([Tapia Granados, 2013](#)). This coincides with recent evidence suggesting that negative stereotypes about older persons in the workplace are often not supported by data ([Zabel & Baltes, 2015](#)) and that policy should focus on extending work-lives ([Barrett, 2015](#)).

The content of the mentioned topic *Free-thinking, boundless city* highlights the fact that accessibility in terms of barrier-free environments is certainly a major topic for cities in ageing societies. Here, [Batty \(2013:192\)](#) states that '*the consequences of ageing [...] will change the way we physically move around the city*'. Furthermore, the co-created results suggest that the term may need to be extended to represent not only physical barriers or online accessibility, but also human relations such as interpersonal communication. The high prioritisation of '*Dialogue of generations creates knowledge*' was not surprising as improving communication between and amongst generations has been a cross-cutting theme in many visions. The need for a better intergenerational dialogue to find solutions for societal problems such as missing social inclusion was mentioned several times. This coincides well with what

⁶ For the entire example see Appendix A.

Hollands (2014) describes as risk of information-rich smart cities that do nothing to foster good communication amongst its inhabitants. Here, Vanolo (2013) argues that smart cities inevitably co-produce smart citizens, leaving responsibility of adaptation to people whilst excluding the marginalised, i.e. for instance the technologically illiterate. This was also addressed in several newsletter articles as dealing with inequality was another cross-cutting theme. Several solutions that can be seen as today's best practices were mentioned in visions and recommendations, including the remark that everybody should have access to e.g. individual care, living quarters that can be easily adapted to changing personal needs or the mentioned labour market.

'Committing to a life full of vitality', the topic ranked third, shows the need for a broader definition of health in future cities. Well-being and a high quality of life were overarching issues mentioned in many of the citizens' visions, and many of the stakeholders' and experts' recommendations reflected this fact, too. Well-coordinated individual health care should include professional services and family support. Even though, for a long time it has been estimated that care is increasingly shifting towards non-family assistance (Treas, 1995) and therefore results in increasing healthcare budgets, family members and friends still provide most long-term care for older people for free (Rechel et al., 2013). Integrating and training family, friends and neighbours in health care of older adults is regarded as important for better social inclusion. Here, more investment would be required to promote personal responsibility together with counselling and transfer of knowledge. This is contrary to the assumption that voluntary work should reduce the costs of the health system.

The intergenerational aspect of ageing well and setting preventive measures are considered as the key factor to a healthier society. Individualised health care is a favoured topic, but at the same time the need for ensuring equality when providing treatment was emphasized. Furthermore, autonomy is considered to be strongly connected to individual levels of education and awareness. With respect to housing, the need to live in one's familiar surroundings became evident as long as it could be modified according to individual needs without great effort at all times. Overall, social inclusion is the main cross-cutting topic to all presented results and seen as main aim for most of the imagined future activities. This overlaps with the well-established Ageing in Place concept (Scharlach & Lehning, 2013; United Nations, 2002; Wiles et al. 2012), accounting for how age-friendly communities are fostering social inclusion with numerous positive effects.

4.1. Method – room for improvement

Within the process, roles of all participants were clearly defined as citizens' visioning processes and experts'/stakeholders' producing recommendations took part in separate workshops. This separation was undertaken with the aim of minimising potential conflicts of interest. The aim of the collective visioning workshop is to create a protected space for citizens to express desirable futures, which inherent implicit and explicit needs and ideas serve for guiding the entire process. Thus, for the starting point of the process this separation makes sense with respect to authenticity in a setting aimed for needs-based agenda setting. Yet, in later steps of the CIVISTI method, softening this strict separation of actors may offer value added. Especially, since evidence from the urban design field suggests that direct interaction between citizens' and experts can improve outcomes of participatory processes (e.g. Bond & Thompson-Fawcett, 2007; Ellis 2002; Innes & Booher, 2004; Mehaffy, 2008). A crucial point in the process was engaging expert's creativity to build recommendations that reflect the visions without introducing too many of their own ideas that were not included before. Here, true co-creation with the owners of the visions as well as experts and stakeholders in the same room seems promising, as tested in the CIMULACT project (see footnote 2). Although, in terms of co-producing research agendas such mixed actor workshops need to be treated carefully to avoid the expression of hierarchies, as research is not a common topic for large parts of society and lay-people – especially those with lower education may be easily intimidated when working together with experts.

With regard to the visioning workshop itself, the applied method may need stronger facilitation when visions are intended to aim at a very specific field (i.e. ambient assisted living). With regard to ageing, the concept of envisioning a desirable future sometimes let citizens to argue that a specific problem – for instance decreasing workforce within care jobs – will be solved in 2050, so that this problem was then not addressed any more in later discussions or the final vision. Adding a public online vote as final step made results more visible for a broader audience, which was intended to increase their external legitimacy. Here, applying an even broader communication strategy in the future may lead to more respondents. For future applications, an in depth evaluation measuring community legitimacy may offer interesting insights into external rate of approval at each stage of the process: from vision to recommendation to post polling.

The additional step of merging citizens' visions with stakeholders' and experts' recommendations improved the overall accessibility of results for a broader audience. In comparison, top ten lists of recommendations – which were sometimes formulated in a very technical way – were the final results of previous applications of the CIVISTI method. Most recommendations are clearly attributable to a specific vision and thus merging visions and recommendations did not lead to an utter mix of topics. Comparing the initial ten visions to the nine final newsletter articles shows that most newsletter articles can be clearly tracked back to one of the initial visions. In this regard, a single newsletter article did not aim at including as many topics as possible, but rather only very specific ones. The relatively even spread of voting results suggests that the created newsletter articles contain socially robust information, as neither of the topics was strongly repelled nor strongly favoured by voters. As voters were asked to choose one to three articles, which they would support implementing, the results are ranked by desirability. Yet, this does not mean that the lower ranked topics are 'undesirable', they were simply not as desirable as the top ranked ones and may still include some highly desirable features. Nevertheless, it can be discussed if the chosen format of fictional dialogues within the newsletter from the future may decrease uptake of information by decision makers. The final results were more accessible in terms of readability, but may lack convenient comprehensiveness policy makers are looking for. Here, a promising approach for the integration of visions and recommendations is scenario-building; this approach was tested in a later study on the future of food on national level in Austria

(Gudowsky et al., 2017).

5. Conclusions

Results of the presented participatory foresight study reinforce the argument that urban governance needs to address additional tasks whilst adapting to challenges arising from ageing societies and urbanisation. Often techno-futures, such as the smart city concept or ambient assisted living are predominantly shaping official governance and planning visions, which in turn shape today's mind-sets and decisions. Yet, alongside mere technological innovation, societal and organisational issues gain importance. Urban development strategies need to incorporate this fact should not predominately be drafted on the paradigm of technological progress. The depicted futures suggest that the city of the future needs to change in order to represent not only the needs of the elderly, but overall has to pay more attention to human factors. Which factors are to be considered in detail and how they have to be prioritised, is of course strongly connected to local context, as suggested by [Neirotti et al. \(2014\)](#). Here, ambient technologies may certainly play a crucial role in meeting demands of elderly city dwellers, but one of the basic needs that citizens implicitly and explicitly expressed the most is the importance of social affiliation and inclusion. If ambient and smart city technologies can foster these human interrelations, then they can form part of solutions to the challenges of the ageing society in the form of inherent supporters and facilitators of social and organisational innovations, thus enabling and sustaining autonomy and a high quality of autonomous life for older adults.

In the previous sections we argued that citizens' experiential knowledge is a valid addition to stakeholders' and experts' views, especially if societal interests are at stake. The applied method is an example of how the process of engaging different actor groups — and thus multiple rationalities — into broadening forward looking urban development strategies can work. Keeping citizens' work at the basis of the process with all subsequent steps referring to its content, as well as a feedback loop of an internal validation ensures authenticity of results. Yet, distinctive room for improving this method lies in constructing a phase where all engaged actor groups meet and collaboratively co-create results, bearing in mind the difficulties mixing those groups entails. As in many foresight activities, impact can remain uncertain and is highly dependent on established relations to policy makers, as well as their willingness for considerations and uptake. Especially here, more research and experimentation is needed to identify reliable ways for increasing impact on actual decision making.

Overall, the case study created an arena for inter- and transdisciplinary dialogue on the future of ageing in the city between citizens, stakeholders and experts. It opened up the somewhat narrow social-technical imaginaries of AAL and smart cities, showing interconnectedness and interdependencies, and served for sketching out alternatives, one of the main functions of participatory foresight. As a public engagement activity, the method is a good addition to the toolkit of foresight, PE and TA practitioners, as it evades the problems arising from the deficit model of knowledge. For the initial collective visioning activity, citizens do not need to be 'educated' in advance to have an informed debate, because their implicit and explicit knowledge, in combination with individual and collaborative space for imagining and discussing, is adequate for setting the normative basis of desirable futures.

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Appendix A

Top position newsletter article after public vote:

Title: From a job market towards a market of activities.

Short description: In 2050, the former labour market has become a 'market of activities'. A basic financial security allowance allows all citizens a meaningful and dignified participation in society. This also allowed for care and support of older people to be upgraded and improved.

An interview with a long-term employee of the city's market of activities:

Question: In 2013, the city designed the so-called 'market of activities'. An important part of this concept was to secure basic needs. Why was this just a vision back then?

Answer: At that time, it still seemed paradoxical to many that society would take on more responsibility for individuals, whilst simultaneously allowing much more self-determination. Our vision was: 'Society provides for basic needs in exchange for individuals strengths and abilities. Each person adds a positive effect to society.' Therefore, we first had to discuss social values that truly fit the 21st century.

Question: What values are you referring to?

Answer: For instance, the value of volunteering, such as in the care of relatives, community involvement, etc. All this societally beneficial and necessary but unpaid work needed to be valued more and reach a higher priority back then. First of all, society needed to reflect on comprehensive integration and inclusion. It also had to prioritise each person's autonomy and authenticity. After work had been re-evaluated, we arrived at the mentioned 'market of activities' in which everyone can participate unlike the former labour market which was rather excluding. We also needed to learn more about the needs of different groups. In a broad dialogue, society had to agree on what can and needs to be met by a basic allowance.

Question: Why was the basic financial security allowance so important in this approach?

Answer: A basic income guarantees an independent total activity time model and therefore the largest possible self-determined life. Thus, a foundation is laid allowing people to pursue meaningful activities. Only when basic needs are covered, quality of life can increase. People primarily need respect and dignity, a roof over their head, clothes, food, health, security, culture and social integration.

Question: What structural modifications were necessary to change the relationship between society and the individual?

Answer: We had to establish other forms of recognition than financial ones. Administrative and social security contributions had to be adjusted. Today, people are at the centre of the market of activities. Thus, they can do meaningful work and enjoy high status. People are supported in their activities by technical innovations that respect abilities and interests. Since 2030, anyone can make a meaningful contribution to society and receives acknowledgment in the form of respect and appreciation. For this, of course, lots of mutual acceptance and strengthened personal responsibility were needed. Furthermore, the education system also had to be modified so that talents are now better recognised and promoted.

Question: How was abuse of the basic financial security allowance prevented?

Answer: Until around 2030, a legal framework was necessary to prevent abuse. In addition, confidence in this long-term, sustainable policy had to be raised. With the introduction of basic security that every member of society receives without fulfilling any conditions, there is de facto no abuse anymore. The city, however, has to cooperate closely with the regional, national and international activities markets in order to maintain high quality and to find solutions to new challenges.

Second position newsletter article after public vote (excerpt):

Title: Dialogue between generations creates knowledge.

Short description: To promote the exchange of knowledge and experience between generations, the programme 'Learning through encounter' was developed in 2020. City-wide meeting places were created, bringing together all generations. Self-reliant learning takes place independently.

Interview in 2050 with the head of the organisation 'Vienna knowledge':

Question: How does 'Learning through encounter' work and what makes it so special?

Answer: Encounters between generations play a central role in the exchange of knowledge. All people can share experiences and learn from each other, regardless of age. [...] We are supported by the market of activities [...] and tailor learning processes for each person individually.

Question: Age really doesn't matter?

Answer: At the beginning of the 21 st century, the roles in teaching and learning were clearly defined: older taught younger. Only rarely was this different, for instance with new communication technologies. Today in 2050, [...] we have another culture of learning because of many pilot projects and experiments. Of course there is still age-related experience, but in general knowledge flows in both directions.[...]An the beginning, we needed spaces and interlinking existing spaces was very helpful. [...] Soon, intergenerational housing models were widely available and many of our offers today take place in their common rooms. Also, virtual meeting spaces were very popular from the start.

Question: Who benefits from the programme, only the elderly?

Answer: Until 2020, loneliness in old age was a major problem. 'Learning through encounter' brought greater social cohesion and prevents social isolation to a degree. Overall, more people feel integrated and their skills are valued, which is something that motivates. Older people today are much more involved in social life. But younger people also feel endorsed when they are taken seriously as teachers. [...]

Question: Today, there are many work models for people shortly before or after pension age. What role did businesses play here?

Answer: Around 2020, many companies were already pioneers in this field. They deliberately created an environment in which intergenerational work was quickly perceived as normal. This way, many prejudices were reduced; mutual tolerance and respect between the generations was encouraged. Such a working environment raises workplace quality and the satisfaction of employees, which in return of course leads to better results. [...]

Third position newsletter article after public vote (excerpt):

Title: Committing to a life full of vitality.

Short description: Vitality is a prerequisite for autonomous living at all stages of life. The city and its inhabitants invest more resources such as time, knowledge and money specifically into health promotion and protection. Vitality is more than just health or absence of illness. There remains much room for community involvement, personal development, education and culture.

An interview with 'Vital Vienna', an organisation of the city's Competence Centre for Quality of Life:

[...] **Question:** You mentioned time as a resource of vitality. Can you explain this in more detail?

Answer: At the beginning of the 21 st century it was evident that the time pressures of everyday life and at work made us increasingly ill. People had little time for their personal development and to maintain social contacts. Therefore, people often suffered from social isolation, especially after retirement. Also, younger people were under severe time pressures and stress that even increased during challenging phases of life, for instance whilst caring for relatives or when starting a family. Younger people were therefore prone to physical and mental diseases. [...] To strengthen people's autonomy, we give advice to young people and adults [...]. As a result, today in 2050, there are many more 'educated' citizens who can easily distinguish between trustworthy and less trustworthy offers on the vast health market. [...]

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