Organizing e-Services Co-production in Multiple Contexts: Implications for Designers and Policymakers

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1 Introduction

The concept of co-production in public services has been explored and debated for a long time [1] and the potential usefulness of service-dominant approaches to the delivery of public services highlighted [2]. Some caveats limit but do not cancel its applicability; for example, choices of how to approach co-production become more complex when vital professional expertise is required or when coerced users are involved (ibid. p. 150). In this paper such complexity is explored by examining a case in point, i.e. the characteristics and outcomes of a European Commission program concerning the development of age-aware information technologies (e-services) for the elderly. Vital expertise is needed in this field both because impairment and chronic diseases affect this growing part of the population and because trade-offs between 'presence' and 'distance' have to be carefully weighted. Indeed, leaving aside for a moment the adoption of information and communication technologies (ICTs), the role of the elderly as co-producers (and not as mere users) for the delivery of effective domiciliary care has been underscored by the literature for a long time [3, 4]. More recently, the relevance of co-production for addressing the needs of an ageing population has been mentioned in several contributions of a collective book edited by Pestoff et al. [5]. In general, there is a growing diversity in the actors involved in the delivery of these services: there are public, not for profit and for profit organizations that need to be managed and governed. Thus, to the original co-production concepts—whereby individual citizens participate at least in part to the production of public services—two other concepts have been developed to better understand the phenomenon: 'co-governance' and 'co-management'. The former refers to the involvement of non-public organizations to the planning phase

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of public services and the latter to the production of services in collaboration with the state [6, p. 29].

The adoption of ICTs based services adds to the complexity of designing and developing services for the elderly [7]. Actually, these technologies are being explored to evaluate their potential in finding solutions to concerns relating both to the shrinking of national welfare budgets and to the social standing of the elderly and their right to be both as independent as possible and integrated in their living and working communities [8]. For example, distance monitoring of conditions of patients in appropriate 'smart houses' can reduce hospitalization time, thus decreasing costs, especially when chronic diseases are encountered [9]. The access to the Internet can facilitate the acquisition of information on leisure services or on-line purchase of goods and services for the elderly with weakened mobility, thus increasing the instances of independent action [10]. Appropriate information systems (IS) applications can facilitate the use and circulation of the experience of older knowledge workers [11] if interfaces are properly designed to balance the diminished visual and hearing capabilities that start affecting people in their fifties [12]. Nevertheless, a number of caveats have been pointed out concerning both the risks of techno-centric approaches in designing the systems (even though they can be mitigated by co-productive relationships) [13] and the ethical implications and dilemmas in conducting research on ageing [14].

The aim of this paper is therefore to understand to what extent co-production concepts and principles are being considered in the development of e-services for the elderly and what approaches can enhance it.

2 Research Strategy

The appearing of new concepts in the co-production literature, namely the above mentioned 'co-governance' and 'co-management', shows that policy building issues are indeed relevant in social welfare provision especially in emerging social care markets. This is certainly the case of ICT enhanced services for the elderly for at least three reasons. First, it is a market which is still in its infancy because both demand and supply have to overcome barriers that hinder their development [15]. Second, economists have acknowledged the fact that an ageing population is one major societal change that challenges governments to adopt a decisive, 'transformational' and innovative, role [16]. Third, governments and international institutions have decided to finance research programs in this field [17, 18]. Notably, in 2007 within an e-inclusion strategy, the European Union (EU) launched the Action Plan on ICTs and Ageing supported by a 2008–2013 specific joint research program on Ambient Assisted Living (AAL). The aim of the program was to provide "equipment and services for the independent living of elderly people" [15, p. 64]. At the end of the program, an evaluation report was commissioned by the European Commission [19].

A through literature review and Delphi study concerning age-aware services, even though limited to e-government, shows that research in this area is scant and rather descriptive concluding that both better theoretical explanations and a detailed differentiation of 'the elderly' are needed. This would help overcome the current basic, anachronistic, understanding and "develop services that are better suited to the individual needs of members of this group" [17, p. 314]. The term 'co-production' does not appear in the cited review and the role of information technologies in the delivery of social services (in general and not specifically on services for the elderly) has been explored in only two papers according to a literature review on co-production [1]. Both works make positive comments on the benefits of ICTs for co-production in general: Cahn and Gray [20] stress the reduction in coordination costs enabled by these technologies while Meijer [21], after considering two cases, concludes that "new media hold the promise of strengthening co–production in an information age" (p. 200). Since 2012 the combination of co-production and ICT in elderly care started to be considered in papers based on research funded by either national or supranational initiatives [22–24]. These investigations (centred on telecare) consider co-production as an appropriate, inclusive approach to the development of age-aware services and reach the following converging conclusions: (i) rather than 'advanced' technologies, the key success factors for in place programs "depend on effortful alignments in the technical, organisational and social configuration of support" and the way "to facilitating the co-production of ageing in place is to provide better support for the routine collaboration between members of formal and informal care networks" [25, pp 245, 263]; (ii) specific project experiences suggest "a renewed focus on design in use rather than the engagement of users in prior design" which means to concentrate research and development efforts on "how infrastructures can be nurtured to support the co-production of service environments within which such systems and artefacts might be better appropriated by their users" [19, p. 21]; (iii) consequently, co-production has to take place "in the context of 'user' engagement in the visioning and re-thinking of the context into which such systems and devices are to be procured and deployed." [20, p. 1138].

Building on these results, since this paper considers the European AAL joint research program which has a scope wider than the development of telecare, the following research question is posed: what is the role of co-production among the relevant contextual factors that have been considered in designing and evaluating the AAL program and which other ones could be considered to further policy support to the development of e-services for the elderly?

A recent work edited by Christopher Pollitt, Context in Public Policy and Management [26], is used to define the guiding principles to interpret the relevant AAL Program documents issued by the European Commission (EC) in order to gain an understanding of what contexts have been considered by the European policymakers, by the EC staff and consultants that prepared the calls and the guidelines, and by the group of experts that prepared the evaluation report. Since the objective of the program is the development of e-services, the paper draws on

the basic tenets of 'service science' [27, 28] and on the central propositions of 'service-dominant logic' [29, 30] as the theoretical underpinnings to frame co-production in the European service innovation (ICT based) undertaking. Indeed, Osborn and co-authors also draw on these concepts to argue for a 'public service dominant' approach in re-considering public services: "[b]y taking a public service-dominant approach, coproduction becomes an inalienable component of public services delivery that places the experiences and knowledge of the service user at the heart of effective public service design and delivery." [2, p. 146]

The paper is structured as follows. The next section outlines the key traits of 'service science' and of 'service dominant logic' as prerequisite for an effective co-production. In section four the AAL case is described using Pollitt's principles of contextual analysis. The case is discussed in section five in the light of the AAL evaluation report prepared by an expert panel appointed by the European Commission (EC). In this section suggestions are made to deal with some of the challenges and recommendations put forth by the report and relevant for the extension of the AAL program. Summary of the work done and implications resulting from it conclude this contribution.

3 The Key Tenets of 'Service Science' as a Prerequisite for Co-production When Approaching e-Services

In his brief note on the Harvard Business Review, when describing the reasons why the discipline of 'services science' seemed to be a promising area of research, Chesbrough [27] stressed the role of intangibility as the specific trait of services. In his work also the question of the transfer of tacit knowledge is particularly relevant since services promote encounters among people that have to learn from each other for an effective service to occur. The accent on tacit knowledge was kept at center stage in the article that Chesbrough co-authored with Spohrer the following year [28].

Other literature on service science defines service as "the application of competences (knowledge and skills) by one entity for the benefit of another" [31, p. 145] so that knowledge is once again at center stage in the discussion concerning the development of a theoretical framework for service science. This definition of service is particularly useful in avoiding a technology driven approach to AAL projects. Since a large number of important factors (i.e. contexts) are to be considered when designing a service, they must not be obscured by letting technologies play a dominant role. In the work of Vargo and Lusch [29, 30], the ten 'Foundational Premises (FP) of Service-Dominant Logic' are helpful to avoid such technological determinism. In this work, five of them seem relevant [26, p. 7]: FP 3, Goods (both durable and non-durable) are a 'distribution mechanism', i.e. they "derive their value through use—the service they provide"; FP 6, "The customer is always a co-creator of value" which implies that "value creation is interactional";

FP 8, "A service centered view is inherently customer oriented and relational"; FP 9, "All social and economic actors are resource integrators". It implies that "the context of value creation is networks of networks (resource integrators)". Finally, the tenth FP: "Value is always uniquely and phenomenologically determined by the beneficiary" since "Value is idiosyncratic, experiential, contextual, and meaning laden". A possible interpretation of these principles for the aims of this paper is: the development of age-sensitive technologies is meaningful if such technologies are considered as distribution mechanisms that derive their value (not per se but) from the use that a network of interacting actors (users and researchers-designers) experience in a certain context.

This interpretation supports (is a prerequisite for) the mutual backing of co-production and the Internet underlined by Meijer when he criticizes current dyadic models based on public service providers on the one hand and on individual consumers on the other hand: "The perspective of co–production opens up the arena to other actors who could possibly play a role in the provision of public services. From this perspective, involvement of citizens, intermediaries and stakeholders strengthens the provision of public services. This idea fits recent shifts in thinking about Internet technology: from the Internet as an information medium to the Internet as a platform for communication and interaction" [21, p. 203].

4 Drawing on Pollitt's 'Contextual Analysis' to Describe the Case of the AAL Programme

In considering social services, Pestoff [6] confirms the multiplicity of actors engaged in the co-production process and he underlines the importance of the notion of 'interdependence'. Indeed, "[m]ost social services are long-term and involve repeated interactions between the professional staff and their clients… When an organization cannot produce the service without some customer input, they are considered interdependent." (ibid. p. 30). He refers to this type of services as 'enduring social services' where it is necessary "to have a realistic assessment of the range of diverse interests and varying motives for engaging in co-production from the perspective of various stakeholders, that is, the municipal authorities, professional staff and users/citizens. The authorities and staff will have various economic, political and professional motives, such as lower costs, higher quality service and more legitimacy. Citizens' motives are based on economic, social, political and quality considerations. It is also important to understand these differences and try to bridge the gap between them in order for co-production to be sustainable." (ibid p. 32).

It is thus apparent that new ICT based services can be developed appropriately by considering the different contexts that affect their design and implementation. As mentioned above in section two, in order to find out what contexts have been considered by the European Commission AAL program, Pollitt's framework [26] is

adopted here. In the preface to the book he edited, he agrees with a large number of scholars who remark that contextual factors are crucial to explain why certain reforms have been successful (or not). Yet, he argues that context is an umbrella term with limited explanatory value since it bundles together different elements and influences. The purpose of the book he edited was therefore to develop a typology of contexts so that some basic issues can be addressed with the support of a theoretical background: for example, contexts can be either constraints or facilitators for change, they have a level or scale (micro, meso or macro), and they have different durations. The closing chapter of the book summarizes the 21 contributions highlighting the following six main concerns that have emerged. Contexts "(a) should be defined, theorized and operationalized; (b) they may be factual and/or conceptual; (c) they are multiple and intersecting; (d) they may be constitutive for action; (e) policymakers should look for the mechanisms and processes that animate contexts and enable them to have effects; (f) comparison can play a valuable role in the analysis" (ibid. p. 374). In what follows, with the exception of the last one, such principles have been applied to the relevant AAL Program documents issued by the European Commission to gain an understanding of what contexts have been considered by the European policymakers, by the European Commission staff and consultants that prepared the calls and the guidelines, and by the group of experts that prepared the evaluation report.

Context definition: the European policy on e-inclusion. The European Union policy for e-inclusion of the European Union (EU) is stated in the "Riga Ministerial Declaration on an Inclusive Information Society" dated June 11, 2006. In the declaration the term e-inclusion stands for both inclusive ICTs and ICTs to be considered as enablers with respect to inclusion objectives.

One year after the Riga Declaration, in 2007, the staff of the European Commission prepared an impact assessment [32] of the afore mentioned targets and initiatives so that appropriate action plans could be developed. The study showed that overcoming divides in the Internet use was not only socially correct but also economically rewarding. In general, "[t]he wellbeing of a vibrant European society depends also on human capital, social capital, health, and reduction of the costs of social exclusion and in general on the quality of life" [ibid., p. 7]. The costs of social exclusion for the 27 European countries were estimated to range between 440 and 764 billion euro every year so that, if the Riga targets were met, "a digitally included society could boost economic growth in Europe by an estimated 85 billion euro in the next 5 years" [ibid.].

Specific factual and conceptual contexts: definition of an action plan for the elderly. The "Action Plan on Information and Communication Technologies and Ageing—Ageing well in the information society" [33], claims to pursue not only advantages for senior citizens (independent and active living, updated competencies, increased social participation) but to be set out also to benefit both European companies (increased market size in Europe in the business area of ICT and ageing, a stronger position in the world market, a better skilled workforce) and authorities (enhancing e-Government solutions leading to reduction in costs and better quality in health and social care systems). Given these sets of needs to be satisfied (and the

expected direct and indirect benefits), the Action Plan is structured around four action areas and objectives. The first one is 'raising awareness' on existing barriers and opportunities (financial and regulatory) and 'establishing consensus and common strategies' among the numerous stakeholders: older persons and their representatives, national and local authorities, industry and providers, employers, health insurers, telecommunications and construction companies, researchers, and standardization bodies. The second area relates to 'putting the enabling conditions in place' which entails (on the part of the Commission) further assessment on legal, technical, and market barriers, in addition to preparing guidance for their removal. The third area relates to 'promoting take-up' whereby the Commission intends to launch pilot projects (on independent living and chronic disease monitoring, on the potential of ICT for active ageing at work) led by industry, service providers and national and local authorities to conduct socio-economic assessment and validation for scaling up.

The 'multiple and intersecting' AAL contexts. In order to pursue the objectives of the 'action areas', the Action Plan defined a specific research activity on Ambient Assisted Living (AAL) which aims at providing:

> equipment and services for the independent living of elderly people, via the seamless integration of info-communication technologies within homes and extended homes, thus increasing their quality of life and autonomy and reducing the need for being institutionalised. These include assistance to carry out daily activities, health and activity monitoring, enhancing safety and security, getting access to social, medical and emergency systems, and facilitating social contacts, in addition to context-based infotainment and entertainment [15, p. 64].

By stating these priorities for research, the European policy maker intended to ensure that the three basic areas of needs addressed (work—community—home) would continue to guide an age-aware ICT policy in a complex network of interconnections. Each year a call was to ensure that the different contexts would be covered.

The AAL context as a basis for action. The program was expected to mobilize at least 600 million euro of private and public funding in 6 years. In fact, in 2008 the European Union (EU) decided to make a financial contribution of 150 million euro to be doubled by member states, thus making 50 % of the budget, while the other 50 % would come from the private organizations in charge of carrying out the research projects. The rationale of this funding approach was both to create a critical mass with the support of EU and to link the research programs of member states while supporting private R&D efforts [25].

Animating the AAL context, enabling it to have effects. The AAL Program has an Internet site (http://www.aal-europe.eu/) to support consortia when they prepare the project to be submitted. Besides the administrative procedures that have to be followed, three documents explain the rationale of the program across all the calls (besides a specific document prepared for each call): (i) Guideline: The Art and Joy of User Integration in AAL Projects—White paper for the integration of users in AAL projects, from idea creation to product testing and business model development; (ii) Knowledge base: AAL Stakeholders and Their Requirements—A

collection of characteristics and requirements of primary, secondary, and tertiary users of AAL solutions, and a guideline for user-friendly AAL design; (iii) Toolbox: Methods of User Integration for AAL Innovations. As the titles show they focus on how users and stakeholders are to be involved in the different phases of the project from the understanding of user needs to the building of a viable idea, to the testing of the system while developing a business model. Furthermore, each year a 'Forum' was to be held in a different country where project participants and experts in the relevant fields would meet and discuss the emerging issues and solutions being developed.

5 Discussion: From the AAL Program Outcomes to Three Proposals

In the following two sub-sections, first the results achieved by the program, and highlighted by a panel of experts appointed by the European Commission [19], are summarized; then, supported by some of the recommendations present in the evaluation report, three areas of concern are suggested here to support downstream innovation and market validation activities within a co-production perspective in successive editions of the program.

5.1 The Program Evaluation: Outcomes, Challenges, and Recommendations

As the chairman of the panel of experts notes in the foreword to the report, not enough time has elapsed to measure the full effects of the investments made. However, the program is considered a success since it has mobilized some euro 630 million (an amount higher than expected) that funded 130 projects along the duration of the program from 2008 to 2013 with the participation of 20 member countries. The multiple and intersecting contexts addressed by the program where covered by the six calls on 'ICT based solutions' concerning Prevention and Management of Chronic Conditions', Social Interaction, Independence and Participation in the "Self-Serve Society", Mobility, (Self-) Management of Daily Life, and Supporting Occupation in Life of Older Adults.

Furthermore, some other key achievements have been highlighted in the report, e.g.: pan European communities have been seeded; strong catalytic effects on national initiatives have been observed; almost one-third of the organizations involved have a user role; 40 % of participants are small and medium size enterprises (SMEs), a higher presence than in other European programs; 50 % of the projects have secured intellectual property rights (of these about one-third are being funded to take their results to market).

There are however some strategic challenges that have to be addressed. The first one is the need for a broad-based view of innovation. Since it is "an innovation programme (as opposed to purely a research programme) … a more broad-based view of innovation is required that fully embraces service innovations and social innovations alongside development of ICT-based solutions." (ibid., p. 20 emphasis in the original). The second challenge is the need for "a stronger strategic focus on creating the marketplace in which products and services can flourish rather than on the development of products and services per se." (ibid). This need to intensify the market orientation in a transnational setting requires a "much more focused attention to exploitation and commercialization" (ibid.) which is based on the solving of problems concerning interoperability, standardization and harmonization. A first step in this direction would be the use of the results of projects by other projects to create an AAL ecosystem.

To respond to these challenges the report proposes 10 recommendations to set up a second edition of the program. In this work, that uses the lens of service-science, four of them seem particularly relevant. Recommendation 1 and 2 are considered of strategic relevance and they concern: (i) the need for a "widening of demand side participation in the Programme" which entails, inter alia, "improving the quality of users' involvements and drawing new actors into the value chain" and "implementing demonstrations and pilots operating under realistic, real-world conditions, including under differing national conditions" (ibid. p. 21); (ii) "The Programme should further enrich the ecosystem surrounding the AAL community in Europe through initiatives and actions that promote networking and stimulate uptake. Emphasis should be on novel measures that have not been tried up to now, such as: sub-programmes involving lead customers and owners; new models of co-creation and living lab solutions" (ibid., emphasis added). To further operational performance, Recommendations 6 and 9 are relevant. The first one concerns, inter alia, the strengthening of implementation and monitoring of the Programme, by experimenting with new, more flexible instruments that are more responsive to market demands; for example, calls should be defined so as to take better account of economic and societal challenges, not just technological options, and the evaluation criteria adapted accordingly (ibid. p. 23). The second one stresses the need to further "enhance and extend the multidisciplinary approach, including the close involvement of end-users at all stages of programme design and execution, and engagement with new stakeholder communities".

The comments and suggestions present in the evaluation Report stress the importance of an overall approach for the successive edition of the Program to be more sensitive to the service science and service dominant principles, described in section three above. Table 1 below shows which service-dominant logic principles [30] can be usefully applied to meet the above mentioned challenges and recommendations.

Table 1 Service science principles and AAL challenges

Challenges (C) and Recommendations (R)	Applicable S-D logic principles (adapted from Vargo and Lusch [30])
C1: Stronger attention to service and social innovation	FP 3: Goods (here technologies) are distribution mechanisms; value generated through use
R1: Widening demand through realistic conditions	FP 6: Value creation is interactional
	FP 8: Customer orientation
R2: Increase networking	FP 9: Actors as resource integrators
R9: Extend multidisciplinary approaches	FP 10: Value is contextual

5.2 Strengthening Both the 'Conceptual Context' and the 'Basis for Action' Context: Co-creation, Intermediaries, and Gatekeepers

The above mentioned recommendations are meant both to mitigate the influence of technologies in the way the AAL projects are designed and to orientate the projects towards service and social innovation. They acknowledge the danger that technological aspects overweigh the social ones. Undeniably, both organizational contexts and processes of development of AAL systems were not properly considered. The following paragraphs outline three proposals to help overcome such risks and to promote co-production in age-aware e-services.

A—'Co-creation' as a basis for co-production in e-services development. The need for new evaluation criteria recommended in the Report and mentioned above convey the idea that the evaluation course becomes itself "a socially embedded process in which formal procedures entwine with the informal assessments by which actors make sense of their situation" [30, p. 94] Since situations evolve, sensemaking is a process by which actors give meaning to their experience and orientate their choices and actions so that the evaluation process is open-ended—whereby, from the AAL artifact design onwards, outcomes are interpreted and used to guide successive action toward improved performances. As Weick and his co-authors point out [34], besides being retrospective (built on experience) and onward looking (aimed at identifying successive actions), sensemaking is also social (actors are interdependent) and it entails communication so that interactive talk and exchange of interpretations allow organizing and decision making in the different circumstances at hand. In sum, the AAL artifact development cycle has to do with organizational change and is a complex matter intertwined with numerous aspects besides the (however crucial) technological ones. Specifically, as Weick et al. argue (supra), important tacit knowledge is created by the interaction of people in the sensemaking process and this fact should be considered when both evaluating and designing AAL e-services. When the size or complexity of the project is significant, the issues in organizing change (and sensemaking) to pursue a certain accomplishment become ever more crucial because of both the time required for the

development of the specific system and the large number of heterogeneous actors involved.

This entails that the introduction and diffusion of AAL based services has to take into account the way "traditional" systems are deployed and in what way the change affects both the 'beneficiaries' and the practitioners involved within the network of organizations they belong to. This is why two principles of the service-dominant approach should be kept at the forefront when defining the rationale of programs, calls, and projects: "all social and economic actors are resource integrators" (FP9) and "value is always uniquely and phenomenologically determined by the beneficiary" (FP 10).

B—'Intermediaries' as facilitators in the co-production process for e-services deployment. To facilitate the adoption and spreading of the services derived from AAL projects, some useful suggestions can be found in the e-government literature and experiences. These have shown the advantage of using 'intermediaries'. What has become clear is that the engagement of 'users' and the contextualization of e-government projects require not only the bridging of the 'digital divide' but also the promotion of 'intermediate entities' to act as a go-between in connecting people with services [35]. The important role of 'intermediaries' becomes apparent because the attitude of people towards ICT-intensive services has not been encouraging [36]. Thus, any strategy concerning the delivery of public services must leverage other resources in order to integrate digital with in-presence public services. Essentially, there are positive effects when a service-dominant logic is being built and a number of intermediate service providers ('intermediaries') develop their value propositions in a sort of supply chain, where different techniques are employed (both digital and in-presence). The emergence of 'intermediaries' and their potential influence on the qualities of a service relationship has been studied specifically by the literature [37]. Adopting a 'beneficiary'-centric perspective, the intermediaries are seen as a way to help a broad range of users to access the information/resources they need through more tailored services. In that sense, the intermediaries have the potential to bridge inequalities, above all in terms of the adoption, access, and use of the ICT resources within a climate of trust. The type of individuals receiving assistance from social intermediaries, compared to those not receiving assistance, tends to be those who are otherwise beyond the digital divide, excluded from other information society benefits. The presence of intermediaries who add human skills and knowledge to the ICT environment is critical for projects that want to reach less advantaged citizens [38]. Sorrentino and Niehaves [37] slot the intermediaries into the "institutional carrier" category (a concept worked on by Scott [39]) and highlight its dual nature: relational agents (i.e., "systems made up of connections among actors, including both individual and collective actors" [35, p. 886]), and symbolic agents (i.e., "systems that can be used to convey information about rules (…), values and norms (…), or mental schema or models" [ibid, p. 882]. In the former role, the intermediaries (for example professional associations) reshape organizational boundaries and "stimulate managers to reconsider who and what are inside versus outside" [ibid, p. 887]. The second role (i.e., symbolic agents) played by the intermediaries, especially those who interact directly with

individuals, is particularly crucial for the carrying of tacit knowledge, i.e., non-codified knowledge embedded in the skills and routines of performers. For instance, an elderly may see the pharmacist as a kind of access point to an abstract system, i.e., the national health service.

C—Gatekeepers as co-producers of relevant information for e-services diffusion. Another role, that of 'gatekeepers', seems important for the penetration of AAL based services: the AAL evaluation Report refers explicitly to a number of decision-makers "who will be critical gatekeepers in enabling solutions to reach the market" (p. 19). The connection among different actors and the bridging of inequalities (while including different kinds of knowledge) can be seen through the lens of the Network Gatekeeping Theory. In an extensive review [40] of the meaning of gatekeeping in the literature of different disciplines (including information systems management) the word gatekeeping "refers broadly to the process of controlling information as it moves through a gate or filter, and is associated with different types of power" (ibid. p. 1). For our discourse on intermediaries and co-creation of meaningful knowledge in age-aware e-services three are the points of interest concerning gatekeeping. First, the role of the 'gated' (e.g., the users of an e-service) and not only that of the gatekeepers needs to be taken into account because both roles interact dynamically. Second, in the management of information systems, gatekeepers are 'facilitators' who "improve or maintain internal processes and help new gated entering the network (gatekeepers … in many cases serve as educators)" (ibid., p. 12). Third, the gated are also considered capable of 'challenging' gatekeepers given: (i) the high rate of exchanges between the two parties; (ii) the useful information potentially generated by the gated; (iii) the choice of alternatives available to the gated; and (iv) the fact that the gated are not powerless.

Furthermore, the "gatekeepers and the gated are not monolithic social and political entities… dynamism is important to represent an environment where the interests and goals of the stakeholders constantly change, as do their gatekeeping and gated roles" (ibid., p. 47). Second, the phenomenon of gatekeeping is large yet sensitive to specific contexts. Third, there are multiple dimensions to gatekeeping whereby, for example, gatekeepers are both 'guardians of boundaries' and 'messengers of the community'.

In sum, the reason for the flourishing of services within services (such as 'intermediaries' and 'gatekeepers') is acknowledging the fact that value is basically idiosyncratic and contextual, as was underscored in this work.

6   Concluding Remarks

The paper has highlighted the following aspects. First, the ageing of the population raises economic issues, in relation to the affordability for national budgets to satisfy their needs, and social issues concerning the right of the elderly to be both as independent as possible and integrated in their living and working communities. Second, the potential of age-aware services based on the development of ICTs is

significant; their development, however, is hampered by questions concerning their dependability, their complex integration with different organizational milieus, their intrusive character, and the ability of many older people to deal with them effectively. Third, approaching the design and development of these emerging services using the 'service science' principles appears to help coping with these issues and with the dangers of technological determinism; indeed, the 'one size fits all' approach is still looming wide over this kind of innovations. Fourth, the 'contextual analysis' conducted on the AAL program and the evaluation Report show that the initiative on the whole has been successful: the seeding of transnational communities, the substantial number of SMEs and of user role organizations, the funding already obtained by a considerable number of projects to further their development. Fifth, there are challenges to cope with and recommendations to be followed stressed in the Report: (i) most AAL solutions are technology driven and they are not adequately centered on service innovations and social innovations (as a consequence the selection criteria of the projects to be funded should better consider this problem); (ii) they should be more focused on exploitation and commercialization as well as proposing pilots operating under realistic conditions; furthermore, (iii) the quality of users' involvements should be improved (i.e. co-production should be enhanced). Sixth, consequently, the 'conceptual context' (more specifically the 'conceptual context of ideas and doctrines' [21, p. 395] should be strengthened to support these challenges; to this end, drawing on neo-institutional theory and on network gatekeeping theory, three suggestions are made as specific contributions of this paper: promoting co-creation while leveraging the roles of 'intermediaries' and 'gatekeepers'. In the light of the outcomes of the case-in-point described above, these suggestions seem to sustain the realization of a 'service-dominant logic' as a prerequisite for an effective co-production in designing and deploying e-services for an ageing population.

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