

Is it time to plan for digital exit strategies as we age? Positioning digital offboarding as a design challenge

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Most services people will use or rely on soon will either contain a digital component or be fully digital/AI. Current design efforts focus on ‘onboarding’ people through user-friendly and meaningful services and on securing ongoing engagement to avoid discontinuation of use. Researchers have begun to look into the requirements for aging users. However, there is no research yet into the tension of digital dependency (i.e., the fact that some services are only provided digitally) and the aging process. Is there a time and phase in life when someone simply can no longer catch up with the relentless demands imposed by ever-changing technologies, new apps, and new tools? If so, what may this mean for the development of public services that are currently moving online and onto the metaverse? Do we need to plan for digital exist strategies at later stages in life? This paper introduces and explores the concept of ‘digital offboarding’ to kick off and inspire a new area of research and practice.

Keywords: *elderly; public services; metaverse; digital offboarding*

1 Introduction

Most services people will use or rely on soon will either contain a digital component or be fully digital/AI. Current design efforts focus on ‘onboarding’ people through user-friendly and meaningful services and on securing ongoing engagement to avoid discontinuation of use. Researchers have begun to look into the requirements for aging users. However, there is no research yet into the tension of digital dependency (i.e., the fact that some services are only provided digitally) and the aging process. Is there a time and phase in life when someone simply can no longer catch up with the relentless demands imposed by ever-changing technologies, new apps, and new tools? If so, what may this mean for the development of public services that are currently moving online and onto the metaverse? Do we need to plan for digital exist strategies at later stages in life?

While ‘onboarding’ is a well-established concept in the design of digital services, we are lacking a hypothesis around ‘digital offboarding’. Generally spoken, offboarding is a term that is almost avoided. It is beset with associations of exclusion. This paper proposes that planning for ‘digital offboarding’ is needed to keep people in touch with services they have come to access in a non-analogue fashion



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using any given new digital technology or AI when they find themselves at a point where they on their own no longer can reliably access these, when they no longer feel safe and confident to use them or when they might expose themselves more easily to fraud and abuse. From the start, this is a controversial proposition, as we rightly need to focus on the abilities of people rather than their ‘disabilities’. I do see it as the responsibility of design to engage in such difficult conversations that are akin to planning for when someone is safer in an assisted living situation than alone at home or when we plan for people to stop driving their car to protect them and others from harm.

The ideas underlying the concept of ‘digital off-boarding’ I present in this paper have been tested and explored for the past two years with international scholars, researchers and professionals in public organizations, design, and HCI. These conversations have affirmed the need for research into this topic and helped to begin to unpack the complexities involved. The aim of this paper is to share some of that thinking and to outline why planning for digital exit strategies reflects a human-centred design approach in an aging society increasingly dependent on public services.

Public services are part of the social contract people have with government (Schmager et al., 2023). Human-centred design practices and design scholarship must be measured against their ability to enhance human living. This includes efforts by design researchers and design professionals to guard existing and create new public values, for example through engaging in policy design or in the design of public services. Here, matters of inclusion, social cohesion, social justice, and strong institutions are at stake. Meaningful public policies and functioning public services ultimately strengthen the trust of people in government and with contribute to democratic societies.¹

When design research constitutes an inquiry into situations with the aim to understand what makes them problematic for people, society, and the human environment, designing constitutes a human-centric endeavour. Büscher (2022) detects in recent efforts to move away from humans a ‘response to increasingly alienated forms of entanglement, which may hamper rather than enable challenging contemporary forms of domination.’ Rather than ‘decentring the human’ he suggests we embrace a dialectics between ‘more-than-human’ and ‘less-than-human’. Such a shift may be more productive for designers as it avoids the creation of yet new trenches while underlining their role in contributing to equitable, just, and inclusive societies. All designers have a responsibility to engage with today’s dominant economic system where certain humans are seemingly treated to be worth less than others and where the effects of our collective human actions are felt the hardest by those with few means and/or social capital.²

The digital transformation has already led to a digital divide (Rogers, 2001; Van Dijk, 2020). Its implications for public service provisions, however, remain unclear (Androniceanu & Georgescu, 2023). There exists consensus, though, that the digital transformation fundamentally changes public service provision and that the ‘digital divide should be investigated to enhance public administration

¹ Accessible, usable, and meaningful public services underline the contributions of design to the Sustainable Development Goals 16 (Peace, Justice, and Strong Institutions) and 17 (Partnerships for the Goals): <https://www.undp.org/sustainable-development-goals>.

² See Phyllis Bennis: ‘Titanic submarine billionaires get massive global rescue effort; refugees left to drown’, (June 30, 2023) peoplesworld.org.

development' (Pariso & Marino 2020). To understand why the concept of digital off-boarding applies to public services and why we should begin to design digital public services with this in mind, we need to have a big picture of the developments in the public sector.



Figure 1. Research groups like the MIT Agelab offer workshops like this at the 2023 CHI conference that allow participants to experience the challenges older adults encounter when trying to access and use online services. Their focus is still on onboarding and on keeping people on board. The range of services for the elderly do not take into consideration public services people may depend on. As a fellow participant remarked: "my bank changes the order of the numbers on my phone every time for security reasons. I will definitely not be able to access my bank account as I get old." Source: Junginger

2 Digital Transformation fundamentally changes public service provision

Across Europe, the private and the public sector struggle to fill positions left open by people who retire. There simply are not enough people on the labour market to replace the current retirees and it will be even more difficult in the future. The 2020 report on the 'Future of Work in Europe' by management consultancy McKinsey finds that 'Europe's working-age population is expected to decrease by about 13.5 million, or 4 percent, by the decade's end.' Countries like Germany face an overall loss (public and private sectors) of roughly 4.0 million people, Italy about 2.5 million people, and Poland still another 2.3 million people. The same report states that 33% of public administrative jobs are likely to be replaced through automation.³

³ McKinsey Report 'The Future of Work in Europe 2020'. Exhibit 4, Jobs at risk by COVID and Automation. <https://www.mckinsey.com/featured-insights/future-of-work/the-future-of-work-in-europe>

E-government and services

Rumours abound that metaverse marriages could soon be legal in the real world in some jurisdictions like Singapore. The metaverse offers a new delivery model for less binding civil matters as well. People with limitations don't need to travel to access city services, while self-service avenues can be created for 24/7 availability. The immersive nature of the metaverse could also benefit healthcare, taking e-consulting to a whole new level.

Figure 2. Pointing out the benefits of public services in the metaverse: A screenshot from McKinsey Consulting. They and others points out that "[t]he next major difference is the low overheads. At present, there are no land rates paid to a local council for public services such as garbage collection, no monthly electricity, and no water bills.⁴

For many public administrations providing a range of essential services that face a shortage of employees, automation cannot come soon enough. Citing Thierer et al. (2017) and Zheng et al. (2018), Wirz et al. (2019) summarize: 'AI provides great opportunities for public administration, including the automation of workflow processes, faster information processing, improved service quality or increased working efficiency.' Wirz et al. further observe, that 'government and public administration increasingly acknowledge the significance of AI for economic and social advancement by applying AI to their administration and public infrastructures, as well as by supporting AI research.' Many governments across the globe with rapidly growing ageing populations (i.e., China, Germany, Italy, Japan, and others) are making great efforts to digitally enable their citizens (see the 2021 WEF agenda).⁵ In line with this trend, initial studies have begun to investigate how comfortable citizens might be with public services that will be delivered by AI (see Schmager et al., 2023) while management consultancies are tailoring to new e-government services online and in the metaverse (Figure 2).

The digital transformation will fundamentally change how public administrations work and how they provide services to people (Agarwal, 2018). In the same vein, it will require people to be able to stay online for as long as they can. Fifteen years from now, they may conduct all their affairs involving government (and private) services through some kind of technology, application, and device. This requires people to be able to manage devices, systems updates, service interruptions, or even completely new tools. But what happens when such interruptions can no longer be processed and taken care of? What measures do we have in place? What 'exit' strategies are we foreseeing? How

⁴ Source: <https://www.mckinsey.com/industries/public-sector/our-insights/digital-public-services-how-to-achieve-fast-transformation-at-scale> and <https://metaverseunpacked.com/physical-real-estate-vs-virtual-real-estate>.

⁵ To underline the urgency, The World Economic Forum put the issue of onboarding the elderly on its 2021 agenda while the Chinese government invests in strategies to digitally enable its aging citizens: <https://www.weforum.org/agenda/2021/01/too-old-is-simply-a-myth-tech-companies-narrow-the-digital-gap-for-the-elderly/>.

might a digital-analogue handshake look like then, especially for public services who are likely to still suffer from the same pressures? And how might we approach this emerging challenge as designers?

3 Studies into digital use by older adults

Most studies on elderly digital users apply the term ‘elderly’ to anyone above 65 years old, grouping 65-year-olds together with users who are 70, 75, 80, 85 and 90 plus years old. Some include even 50-year-olds in this cohort (see Harrington et al., 2022). These inconsistencies persist despite the 2011 recommendation by the International Council of Active Ageing (ICAA 2011) to distinguish between the middle age (45-64), the Young Old (65-74); the Middle Old (75-84) the Old Old (85-99) and the oldest Old (100+). While ageing progresses differently in individuals, it is difficult to argue that the average 65-year-old today has the same digital needs, wants, desires, and abilities as the average 95-year-old (Pednekar et al., 2023). Projecting into the future, what might a 65-year-old be capable on average in 2040 if compared to a 65-year-old, or what about an 80-year-old in 2020?

Enhanced technologies, for example voice assistants, other ‘smart’ devices and the budding AI capabilities promise a new level of support and healthcare for the elderly. Tele-medical applications and solutions can provide emergency support or conversational/social tools to avoid loneliness, stimulate the aging brain and keeping seniors physically fit for example through video exercises (Comincioli et al., 2021). In an aging society lacking more and more staff to tend to the older adults, digital services provide a range of benefits.

Lacking in these explorations and studies is a concern for the demand devices and online tools put on their users to keep up with technological advances, security updates, new software, new tools and new service interfaces. The pandemic has shown that this is a challenge for today’s elderly (Conger & Griffin 2020). However, this will remain a challenge for every older generation in the future, too. In addition, there is an implicit assumption that devices and online tools are and remain functional and working. As the dependency on digital and remote services increases, this area needs more attention.⁶ We need to understand today how we can design for tomorrow so we can support the kinds of policies needed, develop the kinds of practices required and contribute to sustainable and uninterrupted service provisions.⁷ What will be our answers when there is no electricity? How will we support an older adult through a software update when no family support is available? Researchers already know that people need more support once they are in their 60s (Gautun & Bratt, 2023) and that those parents whose children support them digitally receive more public services (Gautun & Bratt 2017). With fewer older adults being able to reach out to children (because they ended up not having have any), will we be able to ensure access to a person’s public services when facial ID fails after suffering from a stroke or arthritis invalidates fingerprint? The concerns for digital exclusion in later life (see

⁶ In Germany in 2019, the emergency crew could not connect its power generator to support a hospital’s medical devices because ‘nobody feels responsible for taking action’ (frontal ZDF, April 18, 2023)

⁷ Some work, like that of Darley et al. (2022) have begun to take such a broader approach. They look into family caregivers’ experience of digital health technology in frailty care of older adults.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9391740>

Wilson-Menzfeld & Brittain, 2022) take on a new dimension in this context. They point to the need for a digital offramp: for exit strategies out of the digital back into the analogue.

The discussion of capabilities of elderly people is filled with landmines because a real concern for protecting people being harmed, harming themselves and others through their digital actions must be paired with concerns for age discrimination (i.e., ageism) and the ethics of care.⁸ This might be possible when we consider issues of digital offboarding as part of life, the digital equivalent of planning assisted living in the analogue. As we age, younger generations will always put new demands on our generation and the ones before us (pewresearch.org). Digital and AI technologies will continue to advance and demand users to be alert and vigilant.

Only a few scholars address the potential downsides of the digital environment for the elderly. One study run by Princeton (Guess et al., 2019) found a strong age effect among social media users who shared fake news. Users over 65 were seven times as likely as the youngest age group in that study. This points to risks elderly users are exposing themselves online as they might be easy prey for malware, phishing and misinformation that may lead them to take actions that are counter to their interests, privacy, and security. How many seniors buy the same book from Amazon and other online platforms because they have forgotten that they already ordered it? Online shopping guidelines for seniors exist but none of them makes forgotten orders a topic.⁹

Just like driving around in the real world is a concern for the individual and society, cognitive, physical, and mental health issues part of the aging process may impact how an elderly person manages him- or herself in digital traffic. At this stage, there are no provisions for a safe and smooth off-ramp or digital exit and few provisions are in place for offboarding someone, say from the metaverse, back into an analogue service when navigating the online world becomes overwhelming. We lack policies, processes, and services to facilitate such a shift. We also lack a transparent and open discussion on a topic that presents the digital equivalent of independent living. Above all, we still lack a human-centred design approach to these new challenges.

4 Current interpretations of on- and offboarding, digital and analogue

Having made the case for why we need to think of digital offboarding for older adults and why this issue is particularly relevant to public services, we can now take a closer look at the concept itself.

The practice of offboarding originated in the working world around human resources and personnel management. Leaders would first onboard new employees (Pearce, 2007) and ensure their proper socialization in a complex organization (Bauer & Erdogan, 2011). Digital offboarding here constitutes the conscious and desirable act to remove access privileges from a person no longer part of an organization in an effort to prevent abuse and to protect the business. *Digital offboarding* is also used to describe the process that takes place when someone who previously had access to an organization's e-mail, intranet and other related resources loses all these privileges after leaving an organization.

⁸ (ethicsofcare.org/joan-tronto).

⁹ See, for example this guide by Capital One: <https://capitaloneshopping.com/blog/guide-to-online-shopping-for-seniors-a2dac768cdf3>.

In marketing, after-sales efforts have a long tradition and can be seen as attempts to keep people ‘on-board’. Their intent is to enhance the user experience during the period of active use of a product or service. Money and energy are spent to reassure people about their purchasing decisions (see Day 1977), increase customer satisfaction with the product they have purchased (see Bell, 1967) and with the very organizations from which they acquired the product or service (Tse et al., 1991).

In contrast, Joe Macleod (2021) points out, hardly any thought, money, or design, is invested in the offboarding experience that, in his view, begins with the end of this active use. The consumer life cycle, he observes, almost completely misses the consumer offboarding experience. Lacking meaning and emotion in the context of dispensing of a previously valued product, people simply discard products after they are no longer useful in their eyes and thus create trash. Off-boarding in the world of analogue products and services presents the missing piece in a circular economy or donut economy model. A renewed focus on the analogue offboarding experience would provide many opportunities for service design to engage and address these ‘ends.’

Echoing the analogue focus on ‘onboarding’, we can observe that most efforts around digital services currently centre on 1) making such services available and 2) on getting people to use them. Onboarding oneself or others to some kind of new digital tool, service, or app has become part of our daily routines. Advancing AI capabilities, for example those now available through ChatGPT4, serve as an illustration that we will not run out of new onboarding opportunities any time soon.

The increasing dominance of and reliance on digital services offered by public and private organizations has produced recommendations for how digital onboarding works best for individuals (see Strahm et al., 2018) and multiple stakeholders (see Stodolka et al., 2023). Digital onboarding, too, is understood as a process with many touchpoints. It generally describes ‘the migration process of services traditionally performed in stores with humans directly involved to fully digital environments’ (Gordillo et al., 2021).¹⁰ But it can also be as simple as registering personal information on an app to become a user of mobile bank applications (Silva et al., 2023).

4.1 Never-ending and ever new: the process of onboarding

The description of onboarding as a migration process is somewhat misleading because it insinuates a beginning, a middle, and an end of this ‘migration process.’ In reality, and in lived user experience, the onboarding process to digital services requires users to onboard continuously, again and again. The changing and evolving nature of digital applications, technologies and now AI continuously introduce new tools and capabilities along with new apps. Users are therefore never done with their onboarding but instead need to figure out how to stay ‘on board’. The user is left with the burden to reconnect and re-install; re-learn and re-configure. On top of this, it is the user who has to distinguish between a scam and a legitimate message before they take action.

The challenges around onboarding are no match for the problems we face when we are being locked out of an app or service we have come to depend on: being disconnected from the internet or an app

¹⁰ Laura Østerhaab Sell does a nice job exploring the complex issues of onboarding in her June 2021 Master Thesis *Improving Users Onboarding Experience with Contextual Design - A case study in developing onboarding systems* (Aalborg University, June 2021).

at the wrong time in the wrong place can already have major negative impacts on our everyday lives as well as on our work lives today. But what will it mean in the future when there are fewer and fewer analogue crutches? One of the key oversights of current digital public service development – and perhaps the digital transformation overall – is the concern for what happens when people no longer manage to stay ‘on board’ or get ‘back on board’. Once again, we are missing insights into what an off-boarding experience might look like.

5 How might we plan and design digital offboarding for older adults?

Glancing at the literature and studies, one might be tempted to think of digital on- and offboarding for the elderly as a problem that will disappear once today's children – digital natives from birth on – have replaced our current elderly who encountered the digital world only in mature adulthood. But this would be to ignore that technologies will continue to advance and develop and continue to put new demands on every person as they age. In fact, might the problem become even bigger for generations that have grown up solely digital and have to re-learn the analogue only in old age?

Research into why and when people discontinue using information communication technologies (ICT) and its tools is related to the topic of on- and offboarding. Berkowsky et al. (2015) look into why elderly people living in continuous care home situation stop using laptops and ipads. Referring to discontinuation, their study, too, focuses on how to keep people active and engaged with ICT to reap health and social benefits. Among the few studies who parse out differences among age groups is the 2006 study by Boulton-Lewis et al. that looked into learning as part of active aging. The randomized study captured information of 2645 respondents ranging in age of which 68% ranged in age from 50-65, 21% 65-74 and 10% above 74 years old.

The authors noticed that respondents aged between 50-64 years were ‘more likely to be interest [sic] in, and need and want to learn to keep up to date with new technology. They also want to make an effort to learn new activities and new things for interest and enjoyment.’ In contrast, they observed that ‘respondents older than 74 years old were more likely to be interested in political events’ of their country. Their learning interest centred on organizing their own transport and in discouraging violence against them. These authors conclude that ‘general health, transport and prior learning can keep members of this [older group] from learning new things.’

Tam (2016) explores the need for a distinctive theory of teaching and learning for older learners and finds that there is no need per se. Instead, she suggests that those teaching older learners should become sensitivities to the characteristics of older learners. The role of teachers and instructors of older learners, so Tam, is to ‘facilitate them to overcome those age-related impediments to effective learning by way of an approach and practice that is based on dialogue between instructors and learners to facilitate communication, openness, trust and commitment.’

The specific needs of the elderly in a rapidly digitalized and connected online world are being noted both as an opportunity for new services (Schreurs et al., 2017) and as a challenge to engage and educate aging people about how to take advantages of these opportunities (Delello & McWhorter, 2017). According to technology experts, no one is too old to learn how to use and function in the digital world (see weforum.org) and yet, older people struggle (Conger & Griffith, 2020). But what neither of these studies into discontinuation address are the alternative options available to people

after they discontinue using information communication technologies (ICTs). There is also an implicit assumption that facilitators are available and accessible – that there are teachers and instructors on hand, affordable and trustworthy. More often than not, it is close others who help older adults, for example with banking (Latulipe et al., 2022). In some cases, elderly even rely on the passwords of their sons and daughters for online access (He et al., 2023).

6 Public services: A trans-generational task and responsibility

While design has a tradition of exploring implications of aging on how to use products and services (Lee & Moor, P, 2015), there is still a gap in how to tackle these challenges for digital and AI supported services. Most designers developing these services are younger than 40 years old, lacking insight and concern for what elderly people value and appreciate (Knowles et al., 2021). Scholars like Claudia Müller, Marén Schorch and David Struzek (2023) and Jarke (2021) demonstrate that mutually designing or co-creating IT applications with older adults produces meaningful and relevant solutions by empowering them to envision and shape the future (Knowles et al., 2021).

Knowles et al. (2021) offer a pointed critique of the current approaches to designing for older adults. They call for a shift towards designing for the experience of aging. They note that ‘this stance also helps designers recognize their own journey toward older adulthood, motivating them to design the kinds of technologies that make this life stage enjoyable once they get there.’

In doing so, these authors position designing for the aging experience as a trans-generational task and challenge. There is an opportunity for design education to engage future older generations: today’s young people who feel confident about their digital abilities and competencies but who are beginning to witness how digital tools, devices, and services fail their parents and grandparents.

Working with forty master students in product service systems during a summer school at Politecnico die Milano, we sought to engage them in the issues of aging and digital public services. To raise their awareness about the challenges new technologies impose on people as they age, we asked them to list any digital tool, application, and software they were using now but of which they did not know of five years ago (i.e., when they were around 20). The whiteboard filled up quickly (Figure 3) and students agreed it was still incomplete.

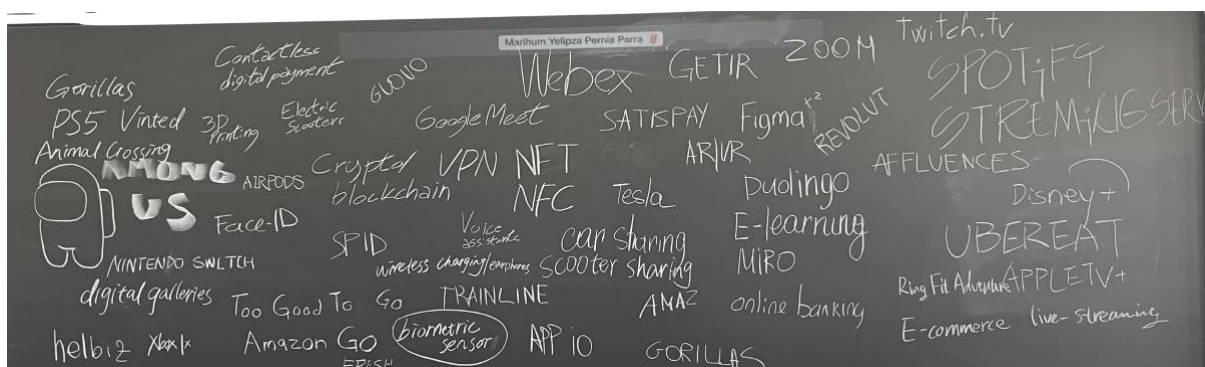


Figure 3. Online tools a class of 40 students in an Italian design school did not know of or did not use five years ago. Foto: author.

Subsequently, the students were asked to envision the kinds of tools, applications, and software that might become available over the next five years – when on average, they might be around 30 years of

age. We repeated this mental exercise until they reached the age of fifty (which they considered to be 'very old') but they were pushed to speculate what challenges they would face in terms of new tools and applications by the time they reach age 75 – or more likely for their generation 80 or 85. In a second step, they received input from the digital transformation group for digital public services.¹¹ This course succeeded in generating conversations about the responsibilities of young designers to engage in the design of digital and analogue public services. The student, working in teams, also identified critical situations for older adults when they rely and depend on digital public services, especially in their care and health. This paper does not allow for a fuller discussion of this project. However, it underlines the role of design education in this matter and serves to drive home that technology always has a social dimension (Fleck & Howells, 2001).

7 Summary and conclusion

What I have attempted with this paper is to position digital off-boarding as a much-needed concept when we design services, public or private. I have tried to lay out an argument for why this is of particular relevance now as we are moving many public services into the digital realm and the metaverse. The upcoming challenges of a digitalized society are real. So are the implications for an aging population for whom new technologies can provide 'support for late-life development and enrichment' (Knowles et al., 2021). What digital public services mean for elderly, however, is not well understood yet. As the public sector is moving into the digital realm and even into the metaverse, we need to learn more about this intersection.

The aim is to support public organizations as they set-up these kinds of services so they are prepared when people who for the better part of their life have been comfortably using digital services may no longer be able to do so. In an aging digital society, we still need a functioning and trustworthy public sector that fulfils its mandates and obligations while allowing members of the public to access services and participate in society continues to be central to lived democracy.

As designers, we have stake in conceiving, developing, planning, and delivering services we need to enhance human living in sustainable democratic societies: those services that instil trust in government, contribute to social justice and social cohesion; the very services that give expression to our values, maintain them, and identify new ones. The shift to the digital realm and AI warrants a reflection on the requirements for public service provisions in an ageing society.

For many readers, this paper must inevitably raise red flags in regard of agism and stereotypes of the elderly as documented by several researchers (see Cuddy, Norton, and Fiske, 2005; Knowles et al. 2021). But the discussion of digital off-boarding offered here should not be seen as contrary to efforts to 'help ensure older adults are not disenfranchised by the digital technologies that permeate society.' Rather, it appears to be a necessary complement. To reduce the real risks of agism and discrimination, designing for digital off-boarding depends on participatory methods like co-design and co-creation as Jarke (2021) and Müller et al. (2023) successfully show.

¹¹ <https://teamdigitale.governo.it/en/>

As illustrated above, digital off-boarding offers unique opportunities for trans-generational exchanges and collaborations – an aspect that gains new value in societies where there are fewer younger people with radically different needs from those off aging and elderly people. Rather than having young people (those in the workforce and those in the know about new technologies and AI) design for what they think might work for ‘the elderly’, we can encourage young people to envision and design for their older selves – while working and learning from people currently going through this life phase. This could even produce new insights into necessary and desirable policies and with that feed user experience into the policy cycle. It would expand the notion of care across generations in different ways and at least hypothetically foster new understanding that may find expression in shared values.

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