A qualitative analysis of the development of digital autonomy beyond the life course perspective
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A qualitative analysis of the development of digital autonomy beyond the life course perspective

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Abstract

The increasing digitization of public as well as private services is progressively posing a threat for individuals and communities that do not possess the necessary tools and competences to handle the new digital ecosystems. Yet, although research has been conducted around digital inclusion in Flanders, in Wallonia and at the national level, our knowledge regarding mechanisms of in/exclusion, as well as their impact on the societal participation of citizens, remains limited. Indeed, recent studies (van Deursen and Helsper, 2018; Helsper and Reisdorf, 2017; Mariën and Baelden, 2015; Brotcorne and Valenduc, 2009) have shown that the traditional discourses correlating digital exclusion with social exclusion and deprivation are no longer valid. As a result, there is no longer a clear-cut view on the groups at risk of being excluded since the classical dichotomies – rich/poor, young/old – are no longer entirely significant. Therefore, a new and contextualized approach is needed to provide a refreshed understanding regarding the mechanisms influencing processes of in-exclusion.

Moreover, several experts such as van Deursen and van Dijk (2014) outline the fact that societal participation is more and more predicated on the ability of citizens to use digital technologies in an autonomous manner. This shift towards the development of strategic competences is already observable in recent e-inclusion policies, focused today not solely on the provision of physical access to technologies, but increasingly emphasizing the use of technologies to achieve broader the societal objectives such as social integration or civic participation. Hence, the IDEALiC project builds on such developments to a) establish the future scene of digital inclusion, and b) provide solutions in line with the current digitalization of society.

This deliverable D.2.2. ‘A qualitative analysis of digital autonomy beyond the life course’ starts from the premise that digital and social in-exclusion are multidimensional processes reflecting broader types of inequalities. This report considers experiences with digital technologies from a life course perspective, and aims at identifying the crucial aspects that define an autonomous use of digital technologies. Concretely, this deliverable is based on 85 in-depth interviews with respondents equally distributed across three (3) specific life categories: a) first life stage: 18-30 years old; b) second life category: 31-50 years old; c) third life stage: 51-70 years old. The 85 respondents are additionally equally divided across three (3) levels of education:

- High education level – respondents with minimum a bachelor diploma;
- Middle education level – respondent with maximum a high school diploma;
- Low education level – respondents with maximum a middle school diploma.

The strength of this approach is that it allows to move beyond the traditional emphasis on quantitative analyses to look at digital practices across the three (3) life stages: when it comes to having access to technology, what experiences are present among three life groups? How and where do experiences differ across the three life groups?
Chapter overview

This deliverable is divided in 8 sections:

Section 1: Introduction
This first part establishes the context of the research and formulates the research questions this deliverable proposes to answer. In this first section, the two research teams and research centers that have collaborated on this project are presented.

Section 2: Theoretical Framework
This second section outlines the theoretical framework of the present deliverable by 1) giving an overview of the concepts already defined in the previous deliverables (D.1.1 and D.1.2), and 2) by adding the original perspective of digital anthropology to researches on digital inequalities.

Section 3: Research Framework
This section presents the empirical process of the study at 1) the level of the methodology with the life course perspective, and (2) at the research design level with a description of the research methods: recruitment of the participants, conduct of interviews, analysis of data.

Section 4: Digital autonomy beyond the life course
This section constitutes the deductive part of the deliverable. Based on the theoretical framework elaborated by Mariën and Baelden (2015), this sections aims at furthering the reflection on digital inequalities by exploring how social inequalities shape the use of digital media, as well as how the differential uses of digital media influence social inequalities. This section ends with a theoretical reconsideration of the concept of autonomy.

Section 5: Factors of engagement: the importance of the intimate
This section constitutes the inductive part of the deliverable. In this section, we put an emphasis on how digital technologies are associated with the production of new forms of intimacies. This section focuses on the complex relationships between digital technologies and the social spheres; it sheds light on how people construct and sustain intimate relationships – between spouses, parents and children – through the mediation of digital technologies.

Section 6: Rethinking access: from platforms to services
This section presents an overview of the digital divide research and looks closely at how access is framed within each of these evolutions. Based on empirical material, this sections shows that there is a shift in how people access technology. Indeed, we observe in our research that having access to technology ceases to be solely about having access to a specific equipment (e.g; computer); rather, having access becomes gradually about the possibility of accessing various services, regardless of the equipment? This is not to say that equipment such as computers or smartphones have become meaningless; instead, we content that have become secondary in importance when it comes to digital engagement.

Section 7: Data literacy: the new gold?
In this section we review the current conceptualizations of data literacy and explore the participants’ perceptions of the datafied society. We show that, although the use of data by third parties is negatively perceived across all age and education categories, those with strong social networks seem to be able to
‘thwart the system’ by choosing self-exclusion from certain digital services as coping mechanism to protect their privacy.

Section 8: Final conclusions
This last part of the deliverable summarizes the main findings of the research while opening up questions and avenues for further research. 1) we advocate for policy and research on digital inequalities paying more attention to the soft skills and the social environment of users as having a tremendous impact on the development of digital autonomy; 2) as access shift from platforms to services, we point out, at the conceptual level, to a renewed understanding of what it means to have access to technology in a media-rich environment. This renewed understanding should serve to broaden the scope of digital inequality scholarship and stimulate a reassessment of digital inclusion initiatives and policies. 3) We advocate for conceptualization of data literacy that goes beyond mere skills to equally put an emphasis on the concept of accountability. We contend that building a strong data literate citizenry is not a realistic endeavor if the infrastructures sustaining and producing such data are not transparent. as daily interactions with data become commonplace, becoming literate in the data is likely to become the ultimate requirement for citizens to be able to participate in society.
SECTION 1 : INTRODUCTION
1. Introduction

The ongoing digitization of services – both public and private – has led to an increased risk amongst the general population of being or becoming digitally excluded (van Dijk, 2005; Helsper, 2008; Mariën et al., 2013). The so-called ‘digital turn’ is posing a threat to all individuals that do not have the necessary skills to handle the digitization of society (Helsper, 2011). Recent studies have shown that the socio-economic background of individuals no longer solely defines digital exclusion (Brotcorne and Valenduc, 2008; 2009; Schurmans and Mariën, 2013); rather, mechanisms of digital exclusion go beyond socio-economically vulnerable groups. The traditionally defined dichotomy of included versus excluded population groups – e.g. rich - poor, young - old or male - female – being no longer valid, new and contextualized approaches are needed to identify those at risk of being digitally excluded. Moreover, research by experts in the field such as van Deursen and van Dijk (2014) emphasizes that digital skills and the ability to deal with digital media in an autonomous way are of increasing importance to ensure one’s full societal participation. This move towards strategic goals and added value gained through the use of digital media is also visible at the level of e-inclusion policies that have shifted from the mere provision of physical access to broader societal goals such as empowerment, inclusion and participation (Mariën and Prodnik, 2014; Steyn and Johanson, 2011; Witte and Mannon, 2010; Zillien and Hargittai, 2009).

The IDEALiC project aims at addressing these issues by focusing on setting the new scene of e-inclusion for the upcoming years. The central research question of the IDEALiC project is: how e-inclusion policies and initiatives can provide solutions for the mechanisms of digital exclusion that coincide with the digital turn?

This deliverable D.2.2. ‘A qualitative analysis of digital autonomy beyond the life course’ considers the experiences of citizens with digital technologies from a life course perspective, and aims at identifying the crucial aspects that define the autonomous use of digital technologies. This report starts from the premise that digital and social in/exclusion are multidimensional processes reflecting broader types of inequalities.

Concretely, this deliverable is based on 85 in-depth interviews with respondents equally distributed across three (3) specific life categories: a) first life category: 18-30 years old; b) second life category: 31-50 years old; third life category: 51-70 years old. The 85 respondents are additionally equally divided across three (3) levels of education: a) high education level – respondents with minimum a bachelor diploma; b) middle education level – respondent with maximum a high school diploma; c) low education level – respondents with maximum a middle school diploma.

Such an approach is relevant insofar as it allows to move beyond the traditional emphasis on quantitative analyses to look at digital practices across the three (3) life stages: when it comes to having access to technology, what experiences are present among three life groups? How and where do experiences differ across the three life groups?
1.1. Presentation of the imec-SMIT VUB research team

1.1.1. Ilse Mariën

Dr. Ilse Mariën is working as a post-doc researcher at imec-SMIT-VUB, a research center attached to the Vrije Universiteit Brussel (VUB) where she has been involved in several projects related to digital inequalities, e-skills and other policy aspects related to digital media. For the moment, she is leading several research projects that focus on the development of the future e-inclusion policies for Belgium (IDEALiC), the proactive development of e-inclusive digital services (City of Things) and participatory processes for the development of e-inclusive smart city policies (PAR4-B). In 2016, she successfully defended her Ph.D. that entails (1) a more contextualized and comprehensive theoretical framework for digital inequalities; and (2) a concise strategic framework for developing sustainable e-inclusion policies. In addition, it examined the informal learning settings, methods and practices used by grassroots initiatives to enhance the development of media literacy amongst at-risk groups.

1.1.2. Axelle Asmar

Axelle Asmar joined the imec-SMIT-VUB research center in 2018 where she works within the DPE Unit – Data, Privacy and Empowerment- on projects revolving around digital skills, digital inequalities and policy aspects related to digital media. She is currently a teaching assistant within the Department of Communication Sciences of the VUB. Her ongoing research focuses on the societal impact of digital platforms: do digital platforms, the modern day curators of culture, reproduce existing inequalities? Do they constitute new tools for citizens’ empowerment, or do they generate new vulnerabilities? She holds a master’s degree in social and Cultural Anthropology (KU Leuven) and a master degree in Journalism and New Media (VUB).

1.1.3. Chantal Wauters

Chantal Wauters joined imec-SMIT-VUB in 2018 where she works within the IDEALiC project on e-inclusion policies in Belgium. She is interested in understanding how digital technologies settle in and influence every lives. She holds a master degree in Communication Sciences from the Vrije Universiteit Brussel (VUB) and an additional master in Art Management from the University of Antwerp.

1.1.4. Willemien Laenens

Willemien Laenens joined the imec-SMIT-VUB research center in October 2016. She graduated in 2016 from her master’s in communication sciences at the VUB, Brussels. She holds a bachelor’s degree in graphic design from Sint-Lukas, Brussels. In her thesis, she examined the motivation of vulnerable youth in the Brussels-Capital Region to use information and communication technologies (ICT). During her internship at SMIT-VUB, Willemien joined the research project ‘Prospective Research for Brussels’, entitled ‘Digital Inclusion for Social Inclusion. Welfare and well-being of vulnerable youth in the digital city: implementation and policy?’. Willemien works as a junior researcher on various projects focusing on (1) e-inclusion policies at local, regional and federal level; and (2) the consequences of digitization processes for (non-)users.
1.1. Presentation of the UCL research team

1.1.5. CIRTES

The Interdisciplinary Centre of Research on Work, State, Society (CIRTES) of the University of Louvain-la-Neuve (UCL) addresses the issues of social inequalities, especially in the field of work, with an emphasis on their effects on society, public policies and social practices. The research conducted by CIRTES members’ focuses on different domains such as working conditions and human resources, diversity, social economy in the North and South, globalization, governance and social policies, collective action and e-inclusion.

1.1.6. FTU

Since 2003, the Fondation Travail-Université has developed an expertise in the area of digital inclusion, in publishing “Internet et inégalités” (Labor), one of the first books on the digital divide for the French-speaking general public. FTU was involved in the early preparation of the national action plan against the digital divide, in 2005, and carried out the evaluation of the first phase 2005-2010 and a pilot study for a second phase at the horizon 2020. FTU also carried out research on digital inclusion at the European level (project eInclusion@EU in the 5th framework program) and the national level, notably for Belspo (“The second order digital divide”, 2008-2010) and for the Federal Public Service for Social Integration. Throughout its various studies of digital inclusion, the research center developed relationships with NGOs and local institutions in the area of e-inclusion, all over the country, and involved them in workshops and consultations.
SECTION 2 : THEORETICAL FRAMEWORK
2. The digital divide debate

“Behind the generic term of digital divide, we are speaking inequality of what? Is it inequality of opportunities, life chances, freedom, capital resources, positions, skills, or what?” (van Dijk, 2005:5)

With the increasing democratization of internet, policies and academic debates have long revolved around the idea that the development of digital technologies would revolutionize the way people live and interact with each other. The digital divide, defined as “the gap that separates segments of society as well as whole nations into those who are able to take advantage of new ICT opportunities and those who are not” (OECD 2000:3), is based on deterministic assumptions that mere physical access to technologies will automatically lead to a full use of ICTs. This traditional conceptualization does not take into account the diverse social and cultural contexts in which technologies are embedded; rather, it tends to imply a singular demarcation between the digitally engaged and the digitally disengaged, between those with access to a computer and those without access (Halford and Savage, 2010).

With this definition in mind, numerous policy strategies and academic research have focused on studying access to, and use of technology with the idea that socio-economic status was the sole predictor of digital engagement. Put differently, the binary framing implied by the digital divide understands inequality as a matter of differences in technical apparatus between urban/rural populations, rich/poor, or young/old. Yet, as more people gained access to digital technologies, observers started noticing that certain kinds of people (whites, males, wealthy...) were more likely to reap the benefits from the internet than others. The strong differences amongst people with formal access encouraged researchers and policy makers to move from binary oppositions towards an understanding the inequalities exacerbated by digital technologies.

The IDEALIC project inscribes itself in the continuity of research on digital inequalities and aims to address these issues by focusing on setting the new scene of e-inclusion in Belgium for the upcoming years. The central research question of the IDEALIC project is: **how e-inclusion policies and initiatives can provide solutions for the mechanisms of digital exclusion that coincide with the digital turn?** In order to answer this question, this deliverable focuses on the following sub-questions:

Henceforth, this chapter reviews the core concepts related to the terms ‘digital divide’, ‘digital exclusion’, ‘digital inequalities’ highlighted in previous publications (D1.1; D1.2) in order to provide consensual definitions for the subsequent empirical analysis.

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2.1 Key theoretical points

1.1.7. Autonomy

The Oxford dictionary defines autonomy as freedom from external control or influence\(^2\). The term has been used in number of disciplines, either in relation to autonomous behavior, autonomous development, or autonomous learning. In education, and particularly in language learning, autonomy has been described as both an attitude towards learning, and a capacity for independent learning (Dickinson, 1995:167). To demonstrate the former, independent or autonomous learners have been found to be more active in the learning process: they can identify and formulate their own goals as well as tailor them to their learning needs and interests (Wang and Peverly, 1986). As for the latter, this has been associated with detachment, critical reflection, decision-making, responsibility, and independent action (Dickinson, 1995; Little, 1991).

1.1.8. Digital Skills

Several studies advance the hypothesis that social inequalities among users are primarily related to an unequal distribution of digital skills (Brotcorne and Valenduc, 2008, 2009; van Deursen and van Dijk, 2014; van Dijk, 2005; Hargittai, 2002; Selwyn and Facer, 2007). Indeed, people who are more skilled tend to develop broader types of activities online and are able to participate to a greater extent in the digital sphere; moreover, they are also more likely to gain benefits from these practices in different arenas of daily life.

Other studies have provided useful classifications with regard to the types of skills needed to use digital technologies in a meaningful and autonomous manner (van Deursen and van Dijk, 2010; Mariën et al., 2010; van Deursen, Helsper, and Eynon, 2014). These studies have highlighted the processes leading to the development of these skills: it appears first that acquiring and developing digital skills is strongly shaped by individuals’ social context; second, acquiring and developing digital skills is equally influenced by individuals’ needs motivating them to use technology in order to achieve specific goals. Furthermore, many researchers (Mariën et al., 2010; van Deursen, Helsper, and Eynon, 2014; Mariën and Baelden, 2015, Asmar, Van Audenhove and Mariën, 2020) have stressed the importance of informal learning settings and the role supportive networks are playing for the development of digital skills. These recent evolutions in research confirm the conclusion of Eynon and Geniets (2016) that “the development of digital skills has a strong experiential component” (2016:2).

1.1.9. Access

The question of access itself can be looked at from a number of viewpoints. Autonomous and unrestricted access to, and use of digital tools can greatly influence the development of digital skills and underlying competencies. Research has shown that the freedom to access and use technology when wished for has a significant and positive impact on the use of digital tools, and on the development of digital skills (Hargittai, 2003). Another viewpoint suggests that access restrictions as well as the quality of access usually result in a very targeted approach as users are mainly concerned with achieving specific goals (homework, searching for information): “what a person can accomplish with an outdated machine in a public library with mandatory filtering software and no opportunity for storage and transmission pales in comparison to what a person can

\(^2\) http://www.oxforddictionaries.com
accomplish with a home computer with unfettered internet access, high band width, and continuous connectivity” (Jenkins, 2006:13).

1.1.10. Usage

One of the pitfalls of digital inclusion studies is that it has often been approached through the lens of ICT diffusion and appropriation models (van Dijk, 2005; Cho, 2010). These models are inadequate insofar as they seldom take into account the social aspect essential to the understanding of digital (dis)engagement. The usage gap perspective (Tsetsi and Rains, 2017; van Deursen and van Dijk, 2014) has shown that one of the strongest predictors of differentiation in usage patterns is socioeconomic status, indicating the straightforward relationship between traditional determinants of social exclusion and digital exclusion (Witte and Mannon, 2010). From this viewpoint, it is assumed that obtaining more information offers direct social benefits. Implicit in this assumption is the underlying statement that ‘the rich get richer and the poor get poorer’ due to the fact that differentiated online activities generate unequal societal advantages. Whilst most scholars agree that information uses are more legitimate than entertainment uses, some researchers have argued that gaming and other entertainment-based ICT can bring added value to skills such as strategic planning or interactive communication (Bleumers et al., 2012; Helsper, 2012; Livingstone and Helsper, 2007). Moreover, recent research (Mariën and Baelden, 2015; Helsper, van Deursen and Eynon 2015) show that the socioeconomic background of individuals’ does not solely define digital exclusion; indeed, there exist other more circumstantial and individual factors that come into play when engaging with ICT. Hence, these research indicate clearly that mechanisms of digital exclusion go beyond vulnerable socioeconomic groups.

1.1.11. Empowerment

The notion of empowerment features prominently in many contemporary discourses putting an emphasis on the participation of the ‘have-nots’ – those without access to digital technologies – in decision-making processes. Its current and extensive use in variety of contexts makes it difficult to define. Nevertheless, beyond the diversity of interpretations, the term empowerment can be defined as processes whereby individuals or groups improve their power in various aspect of life with the ultimate goal of emancipation (Bacqué and Biewener, 2013).

However, while studies have emphasized the multifaceted dynamics of empowerment, a reductionist perspective linking empowerment to individual agency seems to be visible in current digital inclusion policies and initiatives. In fact, reflections and practices aimed at empowering individuals through the use of ICT are often conceived as individual dynamics. In that sense, empowerment is seen as a process of gaining self-worth and personal power via the use of ICT, especially among at-risk groups. Nevertheless, such reflections and practices put strong emphasis on individual agency and little attention to the role of community and collective support in achieving the emancipatory process.
2.1. The original contribution of digital anthropology

“There is no such thing as the internet. There are a number of different media and contents which people assemble to ‘their’ internet.”
(Miller and Slater, 2000:32)

Anthropology as a discipline started with the study of small-scale societies. Yet, as digital technologies progressively became a major component of the human experience, anthropology began looking more closely at the digital world. Digital anthropology thus examines the consequences of the rise of digital technologies and its effect on what it means to be human in the digital world. For digital anthropology, the digital is more than mere abstract; instead, the digital is always approached in context. Indeed, digital technologies have given rise to a plethora of new practices and habits that differ significantly from one individual to the other. Hence, the role of digital anthropology is to engage with each individual to both understand what they do, and how to understand the world from their perspective (Miller and Slater, 2000; Miller, 2018).

As such, we apply a digital approach to the present study and argue further that digital anthropology brings a significant contribution to digital inequality studies in two ways. The first contribution of digital anthropology to digital inequality research is the recognition that understanding individuals’ various perceptions of digital technologies requires to grasp the social context in which these technologies are being used. Rather than defining digital technologies as inherently positive or negative, digital anthropology focuses on the inherent contradictions and complexities that emerge with access to and use of digital technologies. This holistic perspective “relates not just to the way an individual brings together all the dispersed aspects of his or her life as an individual, but also how anthropology transcends the myriad foci of research to recognize the co-presence of all these topics within our larger understandings of society” (Miller 2016:16). In that sense, digital anthropology puts an emphasis on discerning how rapidly technologies become mundane, how digital technologies become progressively embedded within wider social relations and practices.

The second contribution of digital anthropology is the focus on the everyday: how do the use of digital media become integrated into everyday life? How do they connect individuals around common activities or interests to support the unfolding of the everyday life? This ‘everydayness’ (Picone et al., 2019) is exactly what this report seeks to grasp. We contend that it is only by observing and taking into account the uses of digital technologies in the everyday lives of individuals that we can understand mechanisms of (in)exclusion. As stated by Haythornthwaite and Hagar (2005) “it is impossible to talk of ‘the Web’ without understanding and acknowledging that the face of technology, its presentation in everyday life, will vary according to the kind of everyday life into which it is introduced” (2005:316).

Hence, this research focuses on these universes of discourses or social worlds shared by a group of actors and which function as mechanism through which people organize their social lives (Clarke and Star, 2008). According to Kling and Gerson (1978), society as whole consists of a mosaic of social worlds; from politics, to science or economy. In line with Kazmer and Haythornthwaite (2001), we conceptualize internet and digital technologies as a social world in themselves to highlight how the online and digital world intersects with the

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3 https://www.anthroencyclopedia.com/entry/digital-anthropology
offline social world. This approach implies that activities such as internet use can never be examined without a focus on the role of technology in the everyday life. Consequently, understanding mechanisms of in-exclusion requires researchers to grasp 1) the complex perceptions of individuals with regard to technologies, and 2) connect these perceptions with individuals lived experiences and use of technologies.
3. Research framework

3.1. Methodology

1.1.12. Life course perspective

Given the importance of understanding mechanisms of in-exclusion from a broader perspective, we apply the life course perspective as methodology throughout this research. The life course perspective refers to a sequence of activities or events embedded in individual lives and aims at mapping, explaining and describing change in social positions over time (Elder, 1994; Mayer, 2009). This approach states that individuals at each life stage are experiencing various life transitions. The notion of life stage refers to the roles and social positions an individual occupies over time, whereas life transition describes the patterns taken by these social positions over time. From this perspective, each transition corresponds to a significant step in life which not only modifies the social status and role of individuals, but also affects their participation in different social life spheres.

In addition, the life-course perspective insists on taking into account the singularity of individual paths and pays attention to the discontinuities and ruptures in existence. These biographic ruptures can be professional (e.g. unemployment, reconversion, etc.), personal (e.g. divorce, illness or accident), or even geographical (e.g. relocation, emigration, etc.). Much like the life transitions mentioned above, these biographical ruptures have an impact on the social status and role of the individuals (van de Velde, 2015), as well as on individuals’ media use (Ytre-Arne, 2019). Together with Ytre-Arne (2019), we contend that every disruptions in life implies a change how individuals access and use technologies, and a change in personal wants and needs. The life course perspective allows thus a) to look at individuals’ life progress, and b) highlights the circumstantial or structural aspects defining people’s needs, wants and constraints. The aim of this approach in the IDEALiC project is to uncover turning points in life that triggered or halted the use of digital media. Further, the purpose of this methodology is particularly appropriate to discover whether life events have had or still have an influence on the current use of digital media.

This research is built upon in-depth interviews with 85 respondents distributed across the three (3) following life stages:

- The first life stage (18-30 years old) which is the period in which young people are building autonomy in all domains of the social life (employment, relationships...) and steadily increasing their social, economic and political participation in society.

- The second life stage (31-50 years old) corresponds to a period in which individuals are assumed to have developed autonomy and participate fully in society; however, the challenge at this stage is to maintain this autonomy and full participation while at the same time managing work, family and life hazards.

- The third life stage (51-70 years old) is assumed to be characterized by the desire to remain active participants of society and to stay independent while ageing is considered an increasingly important policy challenge.
The life course perspective is valuable as it (1) recognizes that different periods of life influence status, social identity, roles, rights, and expectations in society; (2) it emphasizes the fact that developmental changes are continuous processes experienced through life. However, it must be noted that the life stages outlined may differ from one individual to the other. Therefore, our research ensures a varied distribution and representation in terms of gender and educational levels in order to include those who do not follow the previously described outset of life stages (dropped out of education, long term illness, inability to find work, widowed...). Hence, tackling the issue of digital (in)exclusion from a life course perspective is an innovative research approach as it enables an in-depth and dynamic understanding of the individuals’ perceptions with regard to digital technologies. It also sheds light on the complexity and ambiguity of their uses, on their societal outcomes according to particular life events and social roles. An explicit focus on life stages allows to grasp, through attention to specific events (e.g. marriage, birth, studies, first job, promotion, being fired...), the impact of life experiences on digital media use.

This report focuses on the development of digital autonomy beyond the life course perspective. The aim of this report is to analyze digital inequalities across the above-mentioned life stages to identify: what experiences are present among the three life groups? How and where do said experiences differ across the three life groups?

1.1.13. In-depth interviews

The data used in this research come from in-depth interviews conducted by both UCLouvain-Fondation Travail Université (French-speaking respondents) and the Vrije Universiteit Brussel (VUB) (Dutch-speaking respondents).

The conversations were designed as semi-structured life practice narrative interviews (Laviolette, 2016). As a comprehensive approach, life practice narratives aim at grasping the singular experiences and meanings assigned to the uses of digital technologies from the perspective and words of informants. The life practice narratives are based on the premise that the language used reveals the specific worldview of an individual; this approach puts an emphasis on allowing the story or narrative to emerge from the interaction between interviewer and participants (Muylaert et al., 2014). The objective is to understand what is happening by giving to each respondent the space needed to tell his/her story instead of pre-determining the conclusions about what the researcher believes has already happened (Lofland and Lofland, 1971). Life practice narratives are twofold: they give insight about (1) one’s experiences, and (2) a more general comprehension of respondents’ social worlds. This approach is especially relevant when it comes to the meaning individuals give to their practices and the value systems which underlie them. Moreover, such approach gives an overview of the ways in which individuals enact social norms and translate them in their uses of digital technologies. With this focus on experiences and the sense that is given to it, life practice narratives allow the researcher to seize the significances and strategies that guide an individual’s use of technology.

Furthermore, this deliverable puts a special emphasis on a grounded theory approach to in-depth interviews. The aim of such approach is to create categories of data to (1) analyze the relationships between these categories, and (2) understand the lived experiences of the participants (Charmaz, 1990). Grounded theory refers to a “systematic method for constructing a theoretical analysis from data with explicit analytic strategies and implicit guidelines for data collection” (Charmaz and Belgrave, 2012:347). It reflects flexible strategies condensed in a method that a) help researchers study social processes and b) develop and test
theoretical frameworks that explains these processes. Grounded theory is an inductive and iterative approach (Charmaz, 2008) that moves from the observation of concrete realities to the conceptual understanding of the data collected. From this perspective, data is seen as open-ended and always emergent. The strength of grounded theory lies thus in its ability to piece together theoretical narratives with the interpretative and subjective nature of interviews.

3.2. Research design

1.1.14. Interview guide

The qualitative part of the IDEALiC project consists of a total of 85 in-depth interviews – evenly split between French and Dutch speaking participants and conducted in parallel by the UCLouvain-Fondation Travail-Université (UCL/FTU) research team and the Vrije Universiteit Brussel (VUB) research team. A joint interview guide was developed as guidance for each research team with a set of topics and questions to be covered during the interviews. However, far from being a constraining protocol, the interview guide functioned more as an ‘aide-mémoire’ with each research team encouraged to add extra questions when relevant areas emerged.

The first section aimed at putting the respondent at ease by allowing him/her to present (him)herself, and gave particular attention to possible life transition or biographic ruptures.

The second section looked at the user typology and the learning processes of the respondent. It addressed the uses and non-uses, frequency of use, place and circumstances of access and use. This section also focused on the evolution of competencies and digital autonomy, as well as the potential obstacles encountered. The aim of this section was to understand the importance of digital media, along with insights into usage patterns and the level of autonomy.

The third section was related to the impact of digital media in the different life domains (private life, social life, etc.). The purpose was to identify the determinant life phases and pathways of the respondents to see how digital media influenced life trajectories and vice versa. For this reason, interviews cards with pictograms were used to inspire the respondent. This also allowed the research teams to start a discussion over the use and impact of digital media over the life course.

The fourth section focused on the positive and/or negative effects of digital media during transitions or ruptures in respondents’ lives. For instance, was using digital media helpful to find a job or did the frequency and types of use change with retirement?

The fifth section was dedicated to the digitalisation of services in order to establish possible relations between WP2 and the case study undertaken for WP5.

The aim of this section was to understand the perceptions and opinions of individuals with regard to the increasing digitalisation of services, both private and public. Building on the previous themes, the respondents were asked if they experienced digitalisation as a virtue or a plague.

The last section was entirely left at the disposal of the respondents for additional questions or remarks about the research process, for comments over themes judged unexplored.

Figure 1: Interview guide
1.1.15. *Selection and recruitment of the participants*

The project partners agreed on three (3) sets of criteria to select respondents:

1. **Life stage:** the methodological choice of three life stages for this report refers to current standards in biographical models, commonly used in European social policies (Mayer, 2009) and refers to the life stages described in 3.1.1.

2. **Language, education, gender:** the other variables used for the selection of respondents were:
   - Spoken language: French or Dutch
   - Education level, divided in three categories related to the level of diploma
     - High education level – respondents with minimum a bachelor degree
     - Middle education level – respondents with maximum a high school diploma
     - Low education level – respondents with maximum a middle school diploma
   - Gender: Male/Female/Undefined

3. **Family situation, social status and presence of children:** these three additional variables were taken into account in order to ensure enough variety among the respondents.
   - Family situation: in a couple, living alone, living with parents, living with roommates, widowed
   - Social status: employed, unemployed, retired, student
   - Presence of children: no children, children living at home, children no longer living at home
The objective of these three sets of selection criteria was to have a varied range of profiles of respondents in order to gather diversified discourses and life trajectories. The choices for sampling were not driven in terms of statistic representativeness but sought out for a wide range of individual stories.

Practically, the aim was to have a minimum of two respondents by sub-categories of gender and diploma. Yet, due to the availability of respondents and the time at the disposal of the research teams for the conduct of the interviews, this objective was not always successful. Interviews were conducted in two phases: a first wave was conducted between April 2017 and June 2017 and a second wave of interviews took place between February 2018 and June 2018. The respondents were recruited via the networks of the research teams (family networks, colleagues and friends) and through posts on social media (mostly Facebook). For groups more difficult to reach (e.g. homeless), the research teams reached out to their network of grassroots organisations to contact these respondents. Most of the 85 in-depth interviews have been conducted face-to-face at the desired location of the respondent – mostly at home; some of the interviews have been conducted in the offices of grassroots organisations. At the end of each interviews, participants were given a 30 euros voucher as acknowledgement of their participation. It must be noted that the voucher was never presented as an incentive to participate: the respondents were unaware of such acknowledgement until the end of the interview.

Figure 2: Overview of the respondents

<table>
<thead>
<tr>
<th>Low Education Level</th>
<th>18-30 YEARS OLD</th>
<th>31-50 YEARS OLD</th>
<th>51-70 YEARS OLD</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>W</td>
<td>M</td>
<td>W</td>
<td>M</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>2</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Medium Education Level</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>High Education Level</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Undefined</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total W/M</td>
<td>11</td>
<td>13</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>TOTAL</td>
<td>24</td>
<td>26</td>
<td>35</td>
<td></td>
</tr>
</tbody>
</table>

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3.3. Qualitative data analysis

1.1.16. Nvivo Software

Qualitative data analysis consists at looking at relationships between categories and themes of data in order to understand specific phenomenon. Nvivo is a data analysis software designed for rich text-based data, such as in-depth interviews. It is tailored to facilitate common qualitative techniques for organizing, analyzing and sharing data no matter the research design or analytical approach used. One of the main advantages of using Nvivo for qualitative research is that it leaves room for the creativity of the researcher. Indeed, it allows a deep focus on underlying themes, interpretation and theory instead of the time-consuming process of ‘copy-cut-paste’ of traditional data collection methods. It ensures easy, efficient and safe coding as all sources and data are stored under the same roof and consequently available to be re-used. A second added value is that it improves the accuracy and reliability of the research. With coding and queries, the software facilitates the generation of complex data that would be very difficult to sort otherwise; this is especially true with in-depths interviews and the ‘thicknesses’ of the material of analysis. Nvivo serves as a tool of analysis by complementing the iterative research process while leaving the analytical procedures in the hands of the researcher.

IDEALiC being a collaborative endeavor, a research routine had to be elaborated in order to ensure that both teams would be able to work together while managing large volumes of complex data. For this reason, a codebook was developed with a list of themes and nodes that emerged inductively from the observation of the data.

Figure 3 : The NVIVO Software

https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home
1.1.17. Codebook

All the interviews were transcribed and imported into NVivo software to be coded. In qualitative research, coding refers to the identification of patterns and trends in the text associated with predetermined or emerging research questions. A code can be defined as a tag or label destined to assign “units of meaning to the descriptive or inferential information compiled during a study” (Miles and Huberman, 1994:56). They represent the first step in the analysis of the data by connecting specific contexts or settings to phrases or sentences of the interview data. A codebook is a list of codes with their definitions. It is used to formalize the coding procedure and to provide consistency among coders during the coding process. By applying codes to raw data, each research team was able to discern patterns and examine how the data supported, contradicted existing theory or enhanced existing literature.

The conversational nature of the interviews meant that the creation of the codebook was not a straightforward linear exercise but required shifts in ordering and overlapping topics. Henceforth, the coding process was eminently iterative. At first, all researchers were required to code manually one interview transcript in order to get a first contact with the data that was unimpeded by the potentialities of the software. The aim of this first phase was to allow the data to speak for themselves. Important in this process was to be able to ‘hear’ the voices of the respondents through the textual analysis without being biased by pre-existing assumptions and/or theories. Second, the coding of this first transcript was reviewed and discussed by both research teams until consensus was achieved. This second part ensured that both the inductive (data-driven codes) and deductive (theory-driven codes) approaches could be reflected in the codebook. Thereafter, throughout the coding and analytical phases, a meeting agenda was set in place to ensure regular communication between both teams. During the coding process new codes and themes emerged that were specific to each research team. Far from undermining the usefulness of the codebook, it provided richness to the empirical analysis.

At an analytical level, the codebook is based on the combination of two (2) methods of exploring the data:

A deductive or ‘top down approach’ starting from theories on digital inequalities (Carretero et al. 2017; Mariën and Baelden, 2016; Helsper, 2016; Helsper, van Deursen and Eynon, 2015; Helsper, 2008; Helsper and Eynon, 2010; van Dijk, 2005) to explore the data gathered during the in-depth interviews. This theory-driven approach is observable for instance with themes such as ‘Theme 5: Outcomes’, referring to the benefits someone is able to draw from his/her engagement online (van Deursen and Helsper, 2015). The theory-led perspective enabled the research teams to identify processes not explicitly identified by respondents, as such processes are so embedded in the respondents’ daily life that they are often taken for granted.

An inductive or ‘bottom up approach’, mobbing from the observation of concrete realities to the conceptual understanding of the data collected. This ‘bottom-up’ perspective allowed the research teams to ‘hear’ the voices of the respondents through the analysis. It allowed the constructions of theoretical narratives based in the interpretative and subjective nature of the interviews. For instance, ‘Theme 6: Perceptions’ – individuals’ representations of, and relationships with technology – emerged organically during our conversations with the participants.
At a practical level, the codebook was divided into six (6) different themes:

**Theme 1: Trajectory**

This theme gathers nodes related to the informant’s life course - in relation or not with ICTs - such as triggers of use and non-use, life transitions and biographic ruptures.

**Theme 2: Conditions of access and use**

In this theme were all the nodes related to the material and spatial conditions of access to digital technologies. The nodes specified the type of equipment and places of access. These nodes also emphasized the multi-accessibility provided by digital services.

**Theme 3: Digital Engagement**

Nodes within this thematic group were intended to specify the characteristics of individuals’ uses according to different life domains. This thematic group also contained nodes related to a) frequency of use, b) type of uses and applications, c) the degree of choice concerning the use of digital technologies. It also included nodes related to social representations and attitudes about digital media.

**Theme 4: Autonomy**

Based on the ‘Digital Competence Framework for Citizens’ of the Joint Research Centre of European Commission (Carretero et al., 2017), this theme outlines the features of digital autonomy in terms of a) skills (basic, intermediary, advanced), and b) social support (from and to others).

**Theme 5: Outcomes**

This theme focused on nodes related to the outcomes and consequences - both objective and subjective - of ICT uses or non-uses.

**Theme 6: Digitisation of services**

The aim of this section was to understand the perceptions and opinions of individuals with regard to the increasing digitalisation of services, both private and public. Building on the previous themes, the respondents were asked if they experienced digitalisation as a virtue or a plague.

**Theme 6: Perceptions**

This theme was used as an analytical tool to gather individual perceptions of one’s relationship to technology - whether regarding uses or representations - ranging on a scale from a) negative, b) neutral, to c) positive perceptions.

**Figure 4**: Codebook
SECTION 4: MAPPING AUTONOMY BEYOND THE LIFE COURSE
4. Digital autonomy beyond the life course

Numerous researches have made it clear that technology and digital media permeate every domains of society (van Deursen, Helsper, and Eynon, 2016; Helsper, 2013; Hargittai and Hsieh, 2012; Barkardievda, 2005). With the increasing digitization of services – both public and private – the pressing question is no longer *who has access to a network at home or at work?*; rather, the questions that should be asked is: *what are people doing? And what advantages are they capable of drawing from their time spent online?*

This section aims at furthering the reflection on digital inequalities by exploring how social inequalities shape the use of digital media, as well as how the differential uses of digital media influence social inequalities. This deliverable contends that in order to be able to understand digital inequalities – how they operate and reproduce themselves – we need to have a good understanding of the contexts in which digital media operate (social, individual, structural, institutional...). Therefore we explore in this deliverable how the social intersects with the digital, and the consequences that this intersection has offline.

The following section puts an emphasis on the interrelatedness of mechanisms of in-exclusion at the social and digital level. Instead of interpreting digital and social inequalities in terms of levels, this deliverable conceptualizes these inequalities in terms of intersecting segments reinforcing existing vulnerabilities and/or creating new ones. Dimensions of inequalities – whether social or digital – are dynamic, changing yet constantly reinforcing each other, which is why they cannot be studied separately. Consequently, we base this section on the theoretical framework developed by Mariën and Baelden (2015) and consisting of 13 indicators stressing the interwoven nature of different forms of inequalities, both social and digital. These 13 indicators allow to provide (1) at a theoretical level a renewed understanding of the concept of digital autonomy, and (2) at the policy level, to supply a roadmap of selected indicators that need greater attention when drafting e-inclusion policies.
4.1. In-Exclusion: a theoretical framework

“The typical internet user worldwide is male, under 35 years old, with a college education and high income, urban-based and English-speaking - a member of a very elite minority worldwide. The consequence? The network society is creating parallel communications systems: one for those with income, education and literally connections, giving plentiful information at low cost and high speed; the other for those without connections, blocked by barriers of time, cost and uncertainty and dependent on outdated information” (Human Development Report, 1999:63).

4.1.1 13 indicators of digital inequalities

In the 2015 IDEALiC report ‘8 profielen van Digital Ongelijkheden’, Ilse Mariën and Dorien Baelden highlight the fact that the usage of digital tools is influenced by digital as well as social factors such as access to internet or the media richness of the environment. This report shows that social and digital inequalities are intertwined; consequently, understanding such mechanisms requires to take into account the fact that the digital divide is more than a mere issue of access and skills. Digital and social exclusion are multidimensional processes reflecting broader types of inequalities. As such, technology and society are not to be studied separately but approached through the lens of their co-constitutive relationships. For this reason, this section is built on the 13 indicators developed by Mariën and Baelden (2015) in order to better understand the relation between mechanisms of digital and social exclusion.

At the level of social exclusion, the following 5 indicators were identified:

- **Income**: relates to the financial capacity of the individual. In order to be able to fully participate in society, financial means are essential and the lack thereof has consequences at the digital level with the inability to buy digital tools for instance.

- **Education**: relates to the level of education of the individual. As other researches have shown (van Deursen, Helsper, and Eynon, 2016; van Deursen and Helsper, 2015), the level of education has a direct consequence on the extent to which individuals are able to take part in the social and in the digital world. The lack of basic literacy skills negatively influences the capacity of individuals to take advantage of the digital world.

- **Participation in different life domains**: this indicator relates to the extent to which individuals are able or willing to participate in the society. It refers to aspects such as the broadness of the social network, the lifestyle and the diversity of social interactions. These, in turn, happen to be crucial elements of support in the digital landscape.

- **Agency**: refers to factors having an impact on the capacity of individuals to make choices and decide for themselves the orientation they wish to give to their lives. This element is important insofar as the lack of agency is a structural characteristic of social exclusion. It plays a crucial role at the digital level mainly in relation to the extent to which digital tools are apprehended and inserted in the everyday life.

- **Well Being**: refers to the comfort and contentment individuals have with regard to their own lives and is expressed by factors such as health or the state of personal and emotional relationships. This
indicator allows to nuance the experiences of individuals with regard to their social or digital positions by taking into account the fact that equal chances can lead to unequal positions: two healthy and happy men can have very different opportunities and experiences when it comes to digital inclusion.

At the level of digital exclusion, the following 8 indicators were identified:

- **Access**: refers to factors influencing access such as quality of material, place of access, frequency of use.
- **Attitude**: refers to the motivational dispositions of individuals when it comes to digital media (interest, fear, mistrust, trust...).
- **Digital skills**: refers to factors such as: looking for information, manipulation of hardware and software, problem-solving skills, critically processing information, etc.
- **Social and soft skills**: refers to the way individuals interact with one another and takes into account factors such as communication skills or self-confidence.
- **Autonomy**: refers to the way and extent to which individuals are able to develop their digital skills in an independent manner whether by using a ‘trial and error’ method or adopting a more ‘do-it-yourself’ approach.
- **Type of use**: refers to the variety of use and routines of individuals in the digital world.
- **Media character of the environment**: refers to the influence of the media character of one’s environment on the access, attitude, skills and opportunities of use of individuals.
- **Social support**: refers to the extent to which individuals have or are able to reach for help within their network when confronted to difficulties in their use of digital media.

This research being limited in time and space, not all indicators could be fully and directly explored during the interviews. However, these indicators being intrinsically linked to each other’s, the factors that could not be directly addressed have been taken into account however implicitly during the interviews. For instance, participation, well-being and soft skills were not directly addressed yet implicitly touched upon during first part of the interviews with the questions related to the life trajectories and biographic ruptures. The following section presents the indicators explicitly dealt with during the interviews while taking into account in the analysis the indicators that have been implicitly addressed during the in-depth interviews.

### 4.1.2 Presentation of the hypotheses

This section presents various hypotheses per indicator in order to confront the theoretical inputs on digital inequalities with the empirical findings of this research. Hypotheses are central tools to scientific observation insofar as they allow researchers to compare their expectations, based on theories, against observations of the world, that is to say the empirical material.

This deliverable takes on education as variable to look at digital inclusion beyond the life course. This choice is motivated first by the fact that the associated deliverable ‘D.2.3. Qualitative Analysis Within the Life Course’ (Faure and Schurmans and, 2019) already focuses on age as a variable. Second, education levels and their characteristics stay quite stable over time and generations. For instance, a low level of education entails the
same characteristics for first as well as third generation. The table below gives an overview of the digital indicators and the hypotheses related to each of them:

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Hypothesis (H)</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access</td>
<td>H1a: Education has a direct impact on access</td>
<td>The more educated have more sources of access and a wider variety of tools, mainly due to their higher socio-economic status.</td>
</tr>
<tr>
<td></td>
<td>H1b: Employment has an indirect effect on access</td>
<td>Being employed means a) having more access to top quality equipment and b) having top quality training through courses provided by the employer.</td>
</tr>
<tr>
<td>Attitudes</td>
<td>H2a: Age has a direct impact on attitudes</td>
<td>Different generations have different attitudes about digital media. The younger generations have more positive attitudes towards digital tools.</td>
</tr>
<tr>
<td></td>
<td>H2b: Education has an indirect effect on attitudes</td>
<td>Highly educated having more access to digital media (H1a), they are more positive about digital technologies.</td>
</tr>
<tr>
<td>Types of use</td>
<td>H3a: Education has a direct impact on types of use</td>
<td>Highly educated have more cognitive and capital enhancing types of use.</td>
</tr>
<tr>
<td></td>
<td>H3b: Age has an direct impact on types of use</td>
<td>The early immersion of younger generations into the digital world implies that they have more varied types of use.</td>
</tr>
<tr>
<td>Social Support</td>
<td>H4a: Education and employment have a direct impact on social support</td>
<td>Highly educated have access to better quality of social support and in more various forms (at home, at work, etc.)</td>
</tr>
<tr>
<td></td>
<td>H4b: Age has an indirect effect on social support</td>
<td>Highly educated having more access to digital media (H1a), they are more positive about digital technologies.</td>
</tr>
</tbody>
</table>

**Figure 5**: Presentation of the hypotheses
4.2. Results: Hypotheses on access, attitudes, use and support

1.1.18. Access

The first two hypotheses are concerned with the relationship between access and education (H1a), and between access and employment (H1b) with the implicit assumption that the higher educated and the employed have better access, and subsequently more opportunities in terms of frequency of use, quality of equipment, and places of access. This indicator is measured by looking at three factors:

- The type of equipment (computer, smartphone...)
- The place of access (home, office...)
- The frequency of use (daily, never, occasionally...)

The table below, generated by NVIVO, gives an overview of the relationship between access and education for both linguistic sides. It samples the number times a specific equipment (e.g. desktop) or place of access (e.g. home) is mentioned by the respondents.

<table>
<thead>
<tr>
<th></th>
<th>HIGH EDUCATION</th>
<th>MIDDLE EDUCATION</th>
<th>LOW EDUCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EQUIPMENT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desktop</td>
<td>245</td>
<td>212</td>
<td>146</td>
</tr>
<tr>
<td>Cellular Phone</td>
<td>50</td>
<td>37</td>
<td>15</td>
</tr>
<tr>
<td>Tablet</td>
<td>221</td>
<td>195</td>
<td>129</td>
</tr>
<tr>
<td>Smartphone</td>
<td>60</td>
<td>33</td>
<td>8</td>
</tr>
<tr>
<td><strong>PLACE OF ACCESS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPN/OCR</td>
<td>3</td>
<td>18</td>
<td>30</td>
</tr>
<tr>
<td>Home</td>
<td>50</td>
<td>24</td>
<td>15</td>
</tr>
<tr>
<td>Office</td>
<td>49</td>
<td>24</td>
<td>15</td>
</tr>
<tr>
<td>On the road</td>
<td>35</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>School</td>
<td>25</td>
<td>11</td>
<td>6</td>
</tr>
<tr>
<td><strong>FREQUENCY</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>53</td>
<td>45</td>
<td>31</td>
</tr>
<tr>
<td>Never</td>
<td>29</td>
<td>21</td>
<td>27</td>
</tr>
<tr>
<td>Occasionally</td>
<td>47</td>
<td>34</td>
<td>27</td>
</tr>
</tbody>
</table>

*Figure 6:* Amount of references, per education level, related to equipment, place of access and frequency of use
We observe, for all three factors considered – 1) equipment, 2) place of access and 3) frequency – a stark contrast between the high/middle educated participants and lower educated participants. Indeed, our research shows that high and middle educated in this study have more access to, and opportunities to use digital media. As shown by figure 6 (above), not only do high and middle educated mention possessing a more varied range of equipment (smartphone, computer, tablet, ...), they also mention accessing digital media from various places: on the workplace; on the road, or at home.

“Respondent: What media do I use.. Well it goes from e-mails, smartphone, websites, to social media such as Facebook, Twitter, LinkedIn, Pinterest on occasion. Let me think.... Various apps also in a broader context
Interviewer: And what digital tools do you have yourself? For instance you own a smartphone, a laptop,...
Respondent: Yes, I have a smartphone, a laptop, tablet, ... several actually
Interviewer: Several?
Respondent: Tablet: Several tablets and a laptops

(Male, Dutch speaking, 2nd life category {31-50 y.o}, high education, in couple, employed, children living at home)

Both the range of equipment and the variety of places of access can be explained by the employment status. Being employed often means a) having regular sources of income and, consequently, b) the financial resources to invest in digital tools. This observation is even more relevant when the education level is taken into account as highly educated in this research tend very often to have high incomes. Besides, being employed allows such respondents to have access to quality digital equipment. Stable employment status equally provide them with the resources to use digital media through, for instance, the formal training organized on the workplace. Many of the highly educated and employed respondents in this study report having learned to use, or becoming acquainted with new digital tools through their workplace:

(talking about training organized at her workplace) “Yes, sure in the beginning I thought, I am never going to be able to manipulate all these things. Because they started the training that day by putting everything on the screen and I thought ‘Oh man! I’m going to have to book extra cursus this evening because this is just not going to work’. I had also a colleague who did exactly what I do for work, but in another department within the same big firm; so that same evening we decided to go to the session together and so for 6 months we went 3 to 4 times per week to these trainings. And at the end we succeeded, and now we do so much more things, it is so much easier now that it seems almost natural. And it is the same for almost everyone here, we got to play around a little with these technologies and that is how we’ve all learned.”

(Female, Dutch speaking, 3rd life category {51-70 y.o}, middle education, in couple, retired, children not living at home)
These opportunities of access, both in terms of equipment and frequency of use, ease the contact with the digital; indeed, being in frequent – if not constant contact with digital media – the high and middle educated with stable employment within this research dispose of more opportunities to develop their skills.

On the other hand of the spectrum however, lower educated in our study show less variations in the types of equipment they possess as well as in their places of access. Whereas middle and highly educated cite four to five types of equipment own, lower educated generally possess only one or two digital tool – usually a computer and a smartphone. Within our corpus, our findings show that when low education is linked to low income, the ability to invest money and time in digital media decreases significantly.

“No, I do not have internet at home. I always have to ask friends if they can help because I do not have internet at home. This is why it’s quite hard for me to make progress because I do not have the means to put internet at home. And I do not have a computer at home either because I cannot afford it financially.”

(Female, French speaking, 1st life category {18-30 y.o.}, low education, living with parents, student, no children)

We thus see clearly how social precarity can influence digital engagement: while the use of technology has exploded in the last ten years, the cost of certain digital media still remains prohibitive for many (van Deursen and van Dijk, 2019). Moreover, those with initially low education are further disadvantaged as social and digital participation are heavily influenced by socio-economic positions. As such, our findings show that access to technologies in the digital society is socially distributed insofar as, from the frequency of use to the range of equipment owned, it is clear that being educated and employed plays a great role in the ability to have access to technologies. In addition, our findings indicate that not only is access socially distributed, but it also has severe repercussions on the acquisition of digital skills.

We should therefore not be hasty at dismissing socioeconomic status, and more importantly education as indicator when looking at digital inequalities. At the rate at which technological innovations are happening, first-level digital divides are increasingly apparent (van Deursen and van Dijk, 2019) Henceforth, H1a and H1b are verified: education and employment have more significant effects on access than age.
However, it is important to note that although access is a prerequisite for the acquisition of digital skills and societal participation (van Deursen and van Dijk, 2014), it does not guarantee usage or digital literacy for instance. Being online in a meaningful way depends on more than just ownership of computers or smartphone: (1) Having access means being aware of the potentialities of digital technologies as well as possessing the skills necessary to use these technologies in ways that are meaningful for each individual. (2) Having access also entails being able to use the potentialities afforded by digital media to fulfill one’s needs. As rightly mentioned by Katz and Rice (2002) “individuals come to the words of the Web by becoming aware of needs, interest, and desires, confronting the limits of a local physical setting for addressing these needs... learning that the Internet exists and identifying it as potential resources, gaining tools and skills, searching and finding information or help, making contacts, then disseminating information to similar others, and further gaining skills and information” (2002:98). Moreover, the present results reflect the situation of the participants in this research; therefore, a larger and extended study on the effect of education and income on access may yield different conclusions, or elicit new avenues for reflection.

### 1.1.19. Attitudes

For this section, the aim is to observe which indicators between age (H2a) and education (H2b) are determinant when considering attitudes – both negative and positive – towards digital media. We define attitudes following the interpretation given by Mariën and Baelden (2016) as the motivational dispositions of individuals when it comes to digital media. During the coding process with NVIVO we developed 6 sub-codes related to attitudes and based on the qualitative analysis of the interviews. These sub-codes were: 1) Interest; 2) Disinterest; 3) Fear; 4) Trust; 5) Mistrust; 6) Carefullness.

One of the most conventional view is that younger people are more at ease with digital technologies because they grew up around it (Prensky, 2001; Palfrey and Gasser, 2011). Yet, this digital nativeness has been challenged by studies demonstrating the diversity of attitudes among younger generations (Helsper and Eynon, 2010). The perception that some categories of users can be systematically tied to specific perspectives of the internet - ‘older users have more difficulties with digital media’, ‘younger users are digital natives’ – has been shown to be no longer accurate. In fact, most of the classifications and categorizations that tried to capture why and how people use – or do not use digital media – focused on their (non-) uses and appropriation of particular technologies without connecting these (non-) uses to their beliefs and attitudes (Brandtzaeg, 2010). Yet far from being that straightforward, it must be acknowledged that “as people use or do not use the internet, they attribute meaning to this technology in all its complexity, such as it being viewed as a time waster or a time saver. Over time, people socially construct the meanings of a technology, a common pattern of beliefs and attitudes might group individuals into distinct cultures of the Internet that shape their behavior online including their motivations for getting online or using social media” (Dutton and Reisdorf 2019:3).

Based on the social representations and attitudes expressed by our respondents, our research shows that both education and age are related to attitudes in different ways. The figures below, generated by NVIVO, sample the attitudes most often mentioned by the respondents. Based on the results generated by NVIVO, we were able to come to the conclusion that some attitudes are highly related to education, that is to say

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5 see definitions of each codes in the appendix

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that they are more found in categories sharing the same level of education regardless of age. Other attitudes are more age related as they are found in the same age category despite the different levels of education. Finally, some attitudes go beyond age and education and are found throughout the spectrum of respondents irrespective of social and digital indicators.

<table>
<thead>
<tr>
<th>Attitude related to age (H2a): Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-30 YEARS OLD</td>
</tr>
<tr>
<td>Interest</td>
</tr>
<tr>
<td>Disinterest</td>
</tr>
</tbody>
</table>

Figure 8: Amount of references related to interest and disinterest per age

We define interest as the feeling or wanting to know more about technology, the feeling or wanting to learn more about technology. When using age as indicator, our research shows that, regardless of education, respondents from the third life category (51-70 years old) show strong interest when it comes to digital media.

“So here they took the time to explain things to me and at the end I found it really cool. Thanks to this tool (the computer) you can discover so many things and I also found it quite cool the fact of having an e-mail address. The fact of being able to communicate with the entire world, that’s quite awesome.”

(Female, French speaking, 3rd life category {51-70 y.o.}, low education, living alone, employed, children not living at home)

At the core of this interest is the perception that digital media make life easier and allow a wider opening to the world. Indeed, for this generation, internet and digital media are relatively new and not comparable to any technology they may have known. It is a tool of discovery and it enables them to take advantage of the opportunities provided by digital media. Respondents of this category often take as reference point specific examples from their past to highlight the way digital media have changed their worldviews (job related, family related...):
“Oh no, for me in more ways than not it is certainly an opportunity. We have access to information that we could not find anywhere else. Yes, of course we could go to the library and open books but there is so much information out there and just thinking that you could access it through just one click, I find it awesome. And yes, all the administrative procedures that we can now do just online through sending a form instead of queuing to the counter.”

(Female, French speaking, 3rd Life Category [51-70 y.o.], high education, in couple, employed, children not living at home)

“But I have more free time than before and that means that I have more time to look up for things. I know much more of the world in comparison to five years earlier because I am much more going to look things up. And also I have more time to reflect over more things”.

(Male, Dutch speaking, 3rd life category [51-70 y.o], high education, widower, retired, children living at home)

<table>
<thead>
<tr>
<th>Attitude related to education (H2b): Mistrust</th>
</tr>
</thead>
<tbody>
<tr>
<td>In this research, we find two attitudes linked to education: mistrust and disinterest.</td>
</tr>
<tr>
<td>Mistrust is defined as a feeling that one cannot trust something or someone; it speaks of the feeling of suspicion someone has towards a specific situation or person. In this research, the qualitative code ‘mistrust’ refers to moments in the interview where respondents expressed suspicion towards technology and its use by often invisible third parties; it refers to moments where respondents indicated that they were having doubts regarding the safety of their data. Consequently, the attitude of mistrust in this research is closely related to issues of privacy.</td>
</tr>
<tr>
<td>The feeling of mistrust in this research is more often mentioned by highly educated respondents. Indeed, the repeated concerns of these respondents are articulated around a feeling of increasing intrusion in the personal sphere, which renders it difficult to delineate clear social fences between offline/online, private/public. The table below, generated by NVIVO, samples the number of times mistrust and/or privacy have been named during the interviews. respondents privacy as a concern and/or their mistrust of digital technology as crucial social representation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>HIGH</th>
<th>MIDDLE</th>
<th>LOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mistrust</td>
<td>100</td>
<td>25</td>
<td>49</td>
</tr>
<tr>
<td>Privacy</td>
<td>132</td>
<td>44</td>
<td>46</td>
</tr>
</tbody>
</table>

*Figure 9: Amount of references, per education levels, related to mistrust and/or privacy*

6 https://www.oxfordlearnersdictionaries.com/definition/american_english/mistrust_2

7 See codebook in annexe
“Interviewer: And you have the feeling that your private life is too often put in the spotlight?
Respondent: Yes, my life and the life of my close friends and family. At a certain point now I really have the feeling that it is very dangerous to put pictures of your children online for instance; it doesn’t feel safe; it feels like someone is out there waiting for your data to trap you”.

(Female, French speaking, 2nd life category {31-50 y.o}, high education, in couple, employed, children living at home)

Privacy issues are often a question of establishing boundaries in a society where traditional frontiers between the self and the other, workplace and private life are increasingly becoming fluid and flexible. As digital technologies open up incredible potentials for education or information, so do personal lives become (in)voluntarily accessible and open to others (Petronio, 2002). As Shoeman (1984) puts it, “privacy is regarded as claim, entitlement or right of an individual to determine what information about him/her may be communicate to others” (1984:21). This right to determine what should be communicated to others is even more strongly expressed when it comes to social media, especially Facebook. In a digital environment where the boundaries between the self and the other, the private and the public, seem to lie beyond the control of individual users, some of the respondents in this study have the feeling that it becomes increasingly difficult to regulate who has access to their private information, whence the growing feeling of mistrust.

“Now that I got my new job, I am much more careful about what I post on social media. (...). For instance, now I post much less things on Facebook simply because I had one rule before: I am not adding any colleague on Facebook. But then they started adding me on Facebook; and it was really a difficult dilemma. I did not want to add them but I kept imagining going to work and having awkwardly explain why I didn’t add them on Facebook. So now I’m friend with my colleagues on Facebook. So now I pay even more attention to what I post online. Sometimes I will look at what other people post, and occasionally I ‘like’ one of their post. People from work.”

(Male, Dutch speaking, 1st life category {18-30 y.o.}, high education, in couple, employed, no children)

Another factor contributing to the feeling of mistrust within this category of respondents is related to concerns over data collection and data tracking. High educated respondents in this study are increasingly worried about the absence of transparency when it comes to how, and why their data are gathered and collected:

“Because of this uncertainty, you grow more suspicious every day because, one: you don’t know what is being collected about you, and two: what is being done with all these data collected about you. Another reason I think why more and more people are having a lot of doubts is that actually you might be giving you consent sometimes on some websites for example, but most of the time this happens whitout even you knowing, when you download an app for example. Or when you make a profile online. Of course, it is written somewhere in small letters, but everyone knows no one reads that. And you may think afterwards: ‘well I should have taken the time to read whatever was written’ but the fact is that you wanted to download your app as fast as possible without having to read 20 stupid pages!”

(Male, Dutch speaking, 1st life category {18-30 y.o.}, high education, in couple, employed, no children)
Some differences in how mistrust is articulated with regards to data collection were spotted between Dutch and French speaking respondents. Indeed, within Dutch speaking respondents, numerous references mentioned the fear of being hacked, or of having someone steal personal data; on the French speaking side, the uncertainty linked to the process of data collection was manifested in a proactive manner, with more and more respondents indicating the resort to open sources and open access software to bypass the collection of their data by third parties.

“I am very frightened by this digitalization story, and by how dependent on it we seem to have become. I mean, it’s all fine when everything is going well, but imagine something goes wrong, imagine there is an accident of some sort, then everything can horribly misfire. It is a pity because I have the feeling that a lot of people are not yet aware of the dangers of... (pause), I mean look at what hacking can do”

(Male, Dutch speaking, 2nd life category {31-50 y.o.}, high education, in couple, employed, children living at home)

“So whether it be on Microsoft of Apple, we can use open sources software and what is funny is that most people do not know that Open Office is an open source software, and that the coding and programming is made publicly available and that you can add or complement it totally free of charge. People are not aware of that. It is a way of bypass the system and avoid buying expensive licenses. Slowly, this logic is starting to be implemented in some administrations but they need to be more open to software like Linux. The problem also is that when you come to the private sector, it is solely the domain of Microsoft.”

(Male, French speaking, 3rd life category {51-70 y.o.}, high education, living alone, unemployed, children not living at home)

However, these differences, mentioned in this deliverable for the sake transparency, cannot be generalized to the whole population without additional research. Nonetheless, we emit the hypothesis that these differences – in the context of the present research – can be linked to the distinctive digitalization policies of each linguistic sides: Flanders is intensively digitalizing a lot of the public services – notably with Vlaanderen Radicaal Digitaal, a coalition agreement planning that by 2020, all transactions with the government will happen digitally. This process of digitalization involves the generation and collection of tremendous amounts of data – very often personal data– to be able to function. In contrast, this form of digitalization process seems to be less acute in Wallonia, and to some extent in Brussels.

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Attitude related to education (H2b): Disinterest

Figure 10: Amount of references, per education levels, related to interest and disinterest

The second attitude linked to education is that of disinterest. The qualitative code ‘disinterest’ refers, in this study, to moments during the interviews where respondents expressed a lack of interest in technology. It speaks of the perception that digital technologies are not necessary or not useful in the life of the respondent (‘I don’t see the need of having it’, ‘it does not interest me’). This attitude is mostly found within the lower educated respondents of this study and/or with the respondents having few, if not any, experience or contact with digital media. Despite denying any necessity of access, these respondents are acutely aware that their lack of contact with digital media puts at risk of exclusion. This awareness is often expressed in terms of fear and inadequacy: fear of being excluded, of not being capable of doing something, fear of being laughed at because their perceived lack of skills.

“I interviewer: And what finally motivated you to buy this computer at low cost? Respondent: Fear (silence). Fear of being illiterate. It’s really because I see all around me people communicating with this, they keep exchanging e-mails and stuff, and if I do not accept this, I am isolating myself. Marginalization, that’s what I’m afraid of.

(Male, French speaking, 3rd life category {51-70 y.o.}, low education, living alone, unemployed, no children)

(talking about the use of computer) “But I cannot work with them and it is very frustrating, because of course I could ask people to help me turn it on, yes, but if I can’t even do something as simple as turning the computer on, I am afraid that people are going to laugh at me. And also with my children I could ask but then they answer you something like ‘Mom are you serious? You can’t even do that?’

(Female, Dutch speaking, 3rd life category {51-70 y.o.}, low education, living alone, unemployed, children not living at home)
These fears, far from being irrational, are often grounded in bad experiences with digital media and with society at large. Many of the low educated respondents report having had bad experiences in their daily lives because of their low skills and/or their inability to use digital media. For instance, one respondent (French speaking, 2nd life category {31-50 y.o}, low education, in couple, unemployed, no children) recounted that while going through a banal administrative procedure, he had the feeling of being looked down on and treated like a child by the civil servant because he did not know how to use a computer. Another woman (Dutch speaking, 3rd life category {51-70 y.o.}, low education, living alone, unemployed, no children) recounted having to put up with arrogant comments at the supermarket when she admitted not having an email address when she was asked for her client card. Henceforth, our study shows that these types of respondents are often the target of micro aggressions (treated like children, outcasts...). Moreover, as pointed by Kvasny (2006) shame is a powerful emotion as it very often can silence people: those who have been shamed for not using technology tend to avoid the scrutinizing gaze of those who exercise the authority to judge them. As such, these brief and commonplace verbal and behavioral offenses at the supermarket, at the post office... – whether intentional or unintentional – that communicate hostility toward them, implicitly endorses their feeling of marginalization because of their lack of access to digital media. As a result, these discourtesies only reinforced the participants’ negative perceptions of digital media, preventing them in turn from fully engaging with the digital. In that sense, society puts upon them a lot of expectations without giving them the tools and means to answer these expectations. However, it must be noted that from the moment they become acquainted to digital media, this attitude tends to change, and respondents become more positive about digital media: one respondent (Male, French speaking, 3rd life category {51-70 y.o.}, low education, living alone, unemployed, no children) was initially resistant to digital technologies due to, on the one side to political convictions, and on the other side, negative perceptions of the internet resulting from bad experiences. Yet, when he made the decision of acquiring a computer and as he learned to use it, he became ‘positively intrigued’ by the technology and was in turn more open to taking classes. Another respondent told us:

(talking about computers) “But I was really someone who did not know anything and who did not want to know. Like I said to M. before, for me a computer it’s something so cold, so scary it does not make you want to engage with it, but then when you start using, when you start understanding it a bit, you start telling yourself ‘well, it’s quite easy’, in the sense that it is not as repulsive as you thought it was. So that’s how I started learning, gradually and now I am following a course on office software applications.”

(Female, French speaking, 2nd life category {31-50 y.o.}, low education, in couple, employed, children living at home)
This observation confirms what has already been highlighted by Dutton and Shepherd (2003) when they argue that Internet is an experience technology. They define experience as social proximity with technology and links it to more cyber trust. Put differently, according them (2003), the more people are acquainted to digital media, the more trust they build in digital media partly because they begin to understand the functioning of these technologies; another reason for increased cyber trust is linked to the fact that, because of the proximity engendered by a more consistent use of digital technology, individuals become more familiar with it: “as people use the internet, they gain experience and skills and are more socially proximate, less distanced from technology. This tends to undermine distrust” (Dutton and Shepherd, 2003:25). Hence, there is a need, at the policy level to develop ways and means to promote this social proximity for these participants in order for them to be able to participate fully in society. There is also an urgent need, at policy level, to develop positive support networks within public and private services in order to remediate to the micro-aggressions faced by some respondents because of their inability to use digital technologies.

### Attitude beyond socio-economic status

The most common social perception found across the 85 interviews regardless of age and education relates to social contact. For many respondents, a form of social distance is created by digital media as they feel that there are less social and face-to-face interactions occurring between people. At the heart of this perception is the shared imaginary of a past that used to be more social.

“Sometimes I find all this very annoying, you know. In my time all these technologies did not exist the way they do today so for example when we were eating, or when we were visiting a place there was no TV. But now they sit constantly in from of their screens and I really find this very rude, maybe because I am from another generation, I come from another time. But yes, I find it so rude, now you sit with your daughter to have drink or to eat and she is constantly on her phone.”

(Female, Dutch speaking, 3rd life category [51-70 y.o.], middle education, living alone, unemployed, children not living at home)

Social imaginaries as defined by Castoriadis (1997) refer to conceptions shared by many members of a social group and learned from shared or similar kinds of social practices. Put differently, social imaginaries speak of the way people imagine the society in which they live: “I speak of imaginary because I’m talking about the way ordinary people ‘imagine’ their social surroundings, and this is often not expressed in theoretical term; it is carried in images, stories, and legends” (Taylor, 2002:99). These social imaginaries thus imply a sort of normative understanding of how things ought to go and how life should be conducted:
“The problem with this technology is that it seems to be everywhere. Like, look at the smartphone, it is so much part of our life that at a certain point you just can’t avoid technology altogether. And when look at social relationships, relations with other, I often wonder if our personal or social bonds are not progressively being diluted, becoming more and more superficial because we are so dependent on technology.”

(Female, French speaking, 1st life category (18-30 y.o.), high education, in couple, employed, no children)

This normative understanding in turn shapes social practices and imaginaries insofar as “what is originally just an idealization grows into a complex imaginary being taken up and associated with social practices” (…) (Taylor, 2002:110). Far from being mere fantasies, social imaginaries allow to collectively define core concepts of society: nation, education, etc. In that sense, our research suggests that the social, defined in terms of social interactions between members of society, is perceived by our respondents as a core pillar of life in society. Yet, this central pillar of society is regarded by many of the respondents of this study as at risk of being disrupted by the digital: at the heart of these anxieties, our research reveals an insidious fear among the respondents of this study of losing control over digital media, to end up ruled by technologies. As shown by the quotes above, these anxieties transcend age and/or education insofar as they are as much found within 1<sup>st</sup> life category respondents (18-30 years old), as with 3<sup>rd</sup> life category respondents (51-10 years old), all three education levels taken into account.

![Attitudes](image)

**Figure 11**: Hypotheses H2a and H2b on attitudes - Partially verified

As such, H2a and H2b are partially verified. Some attitudes, in this research, are dependent of age while others are more dependent of education. However, attitudes, whether positive or negative, do not necessarily imply (non-) use. Users showing interest are not necessarily the more engaged with digital media. Respondents showing more distrust or more disinterest towards digital technologies also use a certain number of digital tools.

The different results in our study in terms of attitudes highlight (1) contradictory perceptions of digital media, (2) the complex relationships people form with the digital; and (3) that attitudes are not the primary indicator of internet adoption. While attitudes and social representations of technologies can be used to understand (dis) engagement, we posit against the argument of Reisdorf (2017) that negative attitudes automatically result in non-use and positive attitudes result in digital engagement. Instead, our study shows that the needs and wants of individuals, as well as the extent to which these needs are met, are the strongest factor of motivation and predictor of use, as will be demonstrated in section 6.
Our research shows that (dis) engagement cannot be solely apprehended from the vantage point of attitudes as individuals’ perceptions of digital technologies and the subsequent use of these tools, are shaped by a variety of factors, from age to social status.

The focus on attitudes also elicit three main conclusions and recommendations for policy:

- Looking at the interest showed by the elderly respondents of this category (3rd life stage, 51-70 years old), we argue that it would be useful, at the level of policy and at the level of civil society organisations to keep on stimulating this interest, through trainings, one-on-one guidance, etc. for the people within this life stage.

- Considering the growing mistrust found within the higher educated of this study, we contend that there is a need of more accountability and transparence with regard to the generation, collection and use of personal data. This argument will be explored more in depth in section 6. We also predict, in line with the findings of several authors (Gangdharan, 2015; Prado and Marzal, 2013) that data literacy will become an increasingly vital competency for digital inclusion (section 7). Therefore, there is a need, at policy level and at the level of civil society organisations to invest in data literacy trainings for the general population. This need for a renewed focus on data literacy trainings is made even more relevant in the context of gradual digitalization of society: this digitalization, as aforementioned, is predicated upon the generation of collection of huge amounts of data and runs the risk of deepening the feeling of mistrust within the general population.

- In light of the negative perceptions of technology of some of the lower educated and/ or low digital skills respondents of this study, we argue that there is an urgent, at policy level, to develop positive support networks within public and private services in order to remediate to the micro-aggressions faced by some respondents because of their inability to use digital technologies. To be clear, such aggressions only reinforce a feeling of marginalization, deepening the negative perceptions of technology. The digitalization process should take into consideration the differential pace of each individuals without blaming them; yet, what our research suggest is that very often,

1.1.20. Types of use

When looking at digital inequalities, patterns of usage and practices matter. This emphasis on understanding the uses of technology is at the core of the evolution of digital inequalities studies moving from a focus on divides, to renewed attention to inequalities. Indeed, the beginning of 90s marked the booming of digital divide research, mainly focused on studying differences the disparities between those with access to internet and those without access (Bimber et al., 2000; Bucy, 2000). Yet, as internet became widespread, researchers started noticing strong discrepancies among individuals with access to internet. From there onwards, many started suggesting that beyond the binary differentiation between users and non-users, differences in usages had tremendous implications for social and digital inequality (DiMaggio et al., 2004; Hargittai, 2004; Livingstone and Helsper, 2007).

Indeed, as mentioned by Orlikowski (2000), ‘technology-in-practice’— the continual and habitual use of technology— is often a reflection of broader social structures. In other words, the various uses of digital technologies are always situated in a particular context and reflective of far-reaching dynamics, at the social and at the digital level: what people do online has implications at the social and digital level. Hence,
technology per se should not be the sole focus of digital inequality research; rather patterns of usage can help explain the inequalities associated with the diffusion of technology within a population (Schultz-Shaeffer, 2004). Looking specifically at the concept of ‘use’, we coded the usage of technology of the respondents according to the typology of Cho et al. (2003). This typology has been agreed upon by the research team because, on the one hand the research team judged this typology broad enough to capture the essence of the concept of use; on the other hand, the research team also concluded that the typology of Cho and al (2003) nicely summarizes existing and past research on the concept of ‘usage of technology’.

According to Cho et al. (2003) the types of use of individuals can be divided into three categories: social, escapist, cognitive. 1) The social use refers to emotional experiences such as talking with family members on WhatsApp. 2) The escapist use refers to the use of digital media for entertainment purposes such as watching a moving or playing online games. Finally, 3) the cognitive use refers to what DiMaggio and Hargittai (2001) call ‘capital enhancing activities’: using digital tools for information, to learn about public issues, to engage in societal debates etc. Based on the classification of Cho et al. (2003), we seek to discover which indicator has the most impact on the usages of individuals: do highly educated have more cognitive uses of digital media (H3a) or do younger generations, because of their supposed digital immersion, have a more varied type of use (H3b)?

![Figure 12](image.png)  
Figure 12: Amount of references, per education levels, related to the type of uses
According to Hargittai (2004) age is a strongly associated to variations and uses of internet. Similarly, Madden and Fox (2005) report that young adults (between 18 and 29 years old) use more communication tools such as instant messaging apps and chatting, while older adults (between 29 and 59 years old) tend more to perform job search or consult government sites while online. While not entirely dismissing the fact that differences in use may exist between age groups, our research reveals that the use of instant messaging apps for social and/affective purposes is not limited to an age; rather, this social use is found within this research across all three age and education categories.

(talking about his use of his smartphone for social purposes) “Well, I use it essentially with relatives of close friends. Why? Because it is so cool, we exchange pictures, we send each other texts, and it is totally free. So we are much close from one another now because we exchange pictures, we can video call and so on”

(Male, French speaking, 2nd life category {31-50 y.o}, middle education, in couple, unemployed, children living at home)

(talking about the use of family group chats) “Well usually I use it for example to send pictures of New Year Eve or to send pictures of our costume for carnival. We use it also to post all the important family meetings to which everyone has to be present, like for instance ‘when is everyone free for this event?’ or ‘How about we all go out for dinner’. This is usually posted on our Facebook group. For smaller matters or very specific things to discuss than we do it via WhatsApp or Messenger.

(Male, Dutch speaking, 1st life category {18-30 y.o}, high education, in couple, employed, no children)
The social and affective uses of the respondents, regardless of age and/or education levels, show an increasing use of social media and instant messaging apps (i.e. Messenger, WhatsApp...) as a) mode of communication with close ties, and b) as means of organizing the everyday life (section 5). This use of digital technologies for social purposes demonstrates further how the digital, voluntarily or not, has been integrated in the most mundane activities of life. Finally, the prevalent use of digital technologies for affective/social purposes contributes to nuance the idea at the core of the digital divide debate that high and lower educated, younger and older generations have patterns of use of digital technologies irremediably different (Hargittai 2004). As highlighted by the quotes above, both younger and older respondents in this research display the same types of practices when it comes to the use of technology for social purposes. This argument on social uses will be developed further in the following section on the role of technology on intimate and/or social relationships.

**Cognitive uses**

Looking at the relationship between internet usages and social status, Zillien and Hargittai (2009) report that high-status individuals make extensive use of internet to look up information about stock prices, information on travelling, to use their emails or the search engine Google; as for low-status individuals, the study reveals that they tended to use chat-rooms to a greater extent than their high status counterparts. According to Zillien and Hargittai (2004), the higher the social status of an individual, the more capital-enhancing the usage patterns will be: “social status is significantly related to various types of capital-enhancing uses of the internet, suggesting that those in more privileged positions are reaping the benefits of their time spent online more than users from lower socioeconomic background” (2009:287).

While our research partially confirms the assertion according to which those with more resources offline tend to improve their societal positions by being able to take advantage of the benefits provided by technology, our findings also demonstrate that cognitive activities in this study – e.g. the use of search engine, exploring career opportunities, looking at news online – are quite evenly distributed among the three levels of education rather than appearing more frequently within one social group. We hypothesize that with the democratization of technology and the popularization of search engines such as Google, certain cognitive uses such as seeking for health information are less and less tied to the socioeconomic background of an individual. This levelling up of cognitive uses is interesting as it nuances the assumption that lower educated use the internet in more ‘superficial ways (van Dijk, 2005), or are simply less likely to use the internet.

However, while online information seeking seem to be widespread across all education levels in this study, our research highlights yet that differences between social groups emerge with regard to political participation or civic engagement. Politic participation or civic engagement refers to citizens’ activities affecting politics. It includes amongst other actions such as voting, demonstrating, volunteering, posting blogs signing petitions (van Deth, 2014). Our research shows that higher educated make more references to the use of technologies for civic activities or to participate in political debates:
“Via social media I will for example post a statement online or react to something that I have seen. I do not always have the intention to be heard by everyone, but if I think that I have an argument solid enough, then I will react for sure. I don’t have the time to go on news websites and check all the bad comments that people can give. I only dare to debate in my network, so a network of people I know and who I think are always nice to debate with.

(Male, Dutch speaking, 2nd life category {31-50 y.o, high education, in couple, employed, children living at home)

“So volunteering, yes, I am part of different Amnesty groups and it happened because... So I read almost everything on Facebook and for example I had seen something about them and I thought ‘Well I would like to join one Amnesty group’ and so I looked for one and I found one. So I went to them, a group with elderly people and I told them how I had found about them, how I had look for their phone number online and they were quite astonished.”

(Female, French speaking, 2nd life category {31-50 y.o}, high education, living alone, employed, children living at home)

Much like the respondent’s quote above, many highly educated within this study report being engaged in volunteering work or taking part – online and/ or offline to political debates. This is not to say that lower and middle educated in this study do not report being engaged in civic activities; rather, there were much less references in comparison to highly educated respondents. Another significant aspect highlighted by the quote of the female respondent above relates to the ability to translate the time spent online into an offline action beneficial for the respondent. Our findings, together with the research of van Deursen and Helsper (2015), show that the divides do not appear so much at the level of usages; rather, strong disparities start appearing when comes the time to translate these usages into beneficial outcomes or results that meaningfully answer to individuals’ needs. The focus on civic engagement and political participation is thus important as it illustrates a gap in the ability to transform online activity into offline action for some respondents in this study, revealing that inequality is not limited to what people do online, but extends to how people benefit from being online.

Escapist uses

When looking at escapist and leisure related usages (e.g. watching movies, hobbies...) our study shows, although a feeble trend, an exodus of the younger generations between 18 and 22 years old from older apps such as Facebook or Twitter to video-centric platforms such Snapchat, YouTube and Netflix.

(talking about her daily routine with digital media) “Ah yes, so I use my computer or just use the apps on my TV. So that means, YouTube, Netflix and that’s it actually. I skyped once but actually mostly use my smartphone or my computer or my ipad)

(Female, Dutch speaking, 1st life category {18-30 y.o}, middle education, living alone, student, no children)
“Well I don’t really watch a lot of TV, I mean if I want to know something, or just relax, I just get on Snapchat or YouTube nad watch video’s like people I know on Snapchat, what they are up to, or funny videos, sometimes movies on YouTube”

(Male, Dutch speaking, 1st life category (18-30 y.o), middle education, living alone, employed, no children)

This shift in patterns of use confirms a more general trend predicting death of traditional social media (Facebook, Twitter). According to latest forecast of the research firm eMarketer, two million people under the age of 25 will stop using social networks in 2017. As platforms such as Facebook or Twitter, are increasingly invaded by older generations (2nd and 3rd life category), younger users are progressively pushed towards video-first consumption. We hypothesize that this trend is going to accentuate itself in the coming years, thus forcing to a rethinking of digital and media literacy programs in light of these changes. Digital and media education have been approached through a focus on the ability to read and understand what is displayed by a particular tool. The shift of the new generation towards more video consumption compels to start including images and videos/visual literacy at the core of media education. Yet, additional research is needed to yield deeper insights with regards to this shift in use.

Figure 14: Hypotheses H3a and H3B – not verified

Henceforth, H3a and H3b are not verified. The focus on the different types of use shows that highly educated do not have more cognitive uses per se but seem to be better able to translate these uses into meaningful outcomes offline such as civic presence and participation in societal debates. The focus on attitudes shows, especially in terms of affective uses, that younger-older generations do not always have irremediably different types of use. However, for younger generations the move towards video-centric platforms does ask for a rethinking of media literacy education and programs.

9 https://www.emarketer.com/content/facebook-losing-younger-users-at-even-faster-pace

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1.1.21. Social support

For this last indicator, the aim of the research is to see which of education (H4a) or age (H4b) has a more direct effect on social support: are higher educated better able to draw support from their network at work, at home, etc.? Or are younger generations, because of their immersion into the digital sphere as of early age, exempt of support?

While the concept of social support is starting to be extensively researched in digital inequality research (Courtois and Verdegem, 2016, van Deursen, Courtois, and van Dijk 2014), most definitions from this concept emerge from other fields of social sciences, such as psychology. According to Cobb (1976), social support can be defined as information that leads the subject to believe that (s)he is cared for, that (s)he belongs to a social network of communication. Other scholars define social support either as a flow of emotional concerns, instrumental aid, information or appraisal (House, 1987), while some put an emphasis on social support as an aggregate of personal interactions facilitating the flow of information between people (Islam et al., 2018). Within the scope of this research, we built on these three conceptualizations of social support as definition.

These three approaches show that social support is heavily dependent on social embeddedness – that is the extent to which someone is part of a network. Another commonality between these three perspectives on social support is that they emphasize that effective social support is contingent upon the ability of an individual to make use of the social network for information. Hence, this indicator is highly relevant for digital inequalities studies as it emphasizes the social context of digital engagement; put differently, it shows the strong influence of the social on the digital when it comes to learning and usage.

While most research on social support rely principally on quantitative methods (Courtois and Verdegem, 2014, van Deursen, Courtois and van Dijk, 2014, Helsper and van Deursen, 2017), this deliverable develops one of the first qualitative study on social support: our qualitative analysis allows us to develop a typology of six forms of support-seeking patterns, as well as the individuals’ characteristics associated to each of them. The aim of this classification is (1) to further the debate on social support which often lacks nuance when it comes to the diversity of support people can access; and (2) to identify the profiles associated to each type of support. We contend that by identifying these profiles can contribute to the development of digital inclusion policies tailored to the needs and wants of each individuals. Albeit individuals’ characteristics associated to each profile are mapped out, it must be noted that these patterns of support are not mutually exclusive: people combine varied forms of support to meet their needs, depending of several factors such as age, life events or biographic ruptures.

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The support-deprived are characterized by a lack of access to social support, either within the domestic circle or at a more technical level (i.e. computer classes). Respondents of this category in this study are generally low educated individuals coming from all three life categories (18-30 years old; 31-50 years old; 51-70 years old). At the social level, their situation is often precarious (e.g. unemployed, retired, chronic illnesses, etc.) with a limited social network and low economic resources. At the digital level their low economic resources prevent them from having access to varied digital tools and quality-equipment, which results in low digital skills. This already precarious situation is further accentuated by the fact that they do not have access to proper help: while acknowledging that they need help, support-deprived in this study also recognize their inability to draw support from the limited social networks at their disposal.

Figure 15: Typology of social support

<table>
<thead>
<tr>
<th>Type of support</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support-Deprived</td>
<td>- Low level of digital skills and of often in situations of social precarity and/or social exclusion.</td>
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<tr>
<td></td>
<td>- Acknowledge that they need help with digital technologies but in the incapacity to find someone to help because of their situation of exclusion.</td>
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<tr>
<td></td>
<td>- Found within all three life categories (18-years old; 31-50 years old; 51-70 years old)</td>
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<tr>
<td>Community-Supported</td>
<td>- Almost all sources of support come from computer room and/or computer classes.</td>
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<td></td>
<td>- Computer room/classes seen as:</td>
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<td></td>
<td>- a way out of potential exclusion, both at the social and digital level</td>
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<td></td>
<td>- a way to become more independent (no longer depends on children for support)</td>
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<tr>
<td></td>
<td>- Mostly respondents from 3rd life category (51-70 years old)</td>
</tr>
<tr>
<td>Supported Through Substitution</td>
<td>- Do not directly engage with digital media but ask someone in their close social circle (generally family members) to accomplish a specific task for them (e.g. send an email)</td>
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<td></td>
<td>- Spotted with older couples where one spouse either has more skills than the other or when one spouse does not want to use digital media</td>
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<tr>
<td></td>
<td>- To be distinguished between a) supported with a) supported with low digital skills, and b) supported with low motivation</td>
</tr>
<tr>
<td></td>
<td>- Mostly respondents from late 2nd life category (41-50 years old) and 3rd life category (51-70 years old)</td>
</tr>
<tr>
<td>Network-Supported</td>
<td>- Draw support mainly from close social circle (family/children/spouses/close friends and/or coworkers).</td>
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<tr>
<td></td>
<td>- Show the importance of social embedding: to be able to draw support, there is a need to be integrated in a social network.</td>
</tr>
<tr>
<td></td>
<td>- Mostly, 2nd life category (31-50 years old) and 3rd life category (51-70 years old).</td>
</tr>
<tr>
<td>Vicarious Learners</td>
<td>- Do not explicitly ask for support but learn by emulating others.</td>
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<td></td>
<td>- Rely on watching friends’ and family’s use of digital media and from then onwards start learning by doing.</td>
</tr>
<tr>
<td></td>
<td>- Mostly respondents from the 1st life category (18-30 years old).</td>
</tr>
<tr>
<td>Self Supported</td>
<td>- Do not seek support from the domestic sphere but are a great source of support for others (mosty domestic circle).</td>
</tr>
<tr>
<td></td>
<td>- Reveal high levels of digital skills and digital fluidity. Are more likely to stretch out of their comfort zone to learn new things. When help is needed, they look for solutions online and learn by doing.</td>
</tr>
<tr>
<td></td>
<td>- Mostly respondents from the late 1st life category and early 2nd life category (between, 25 and 45 years old). Mostly male and highly educated.</td>
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</tbody>
</table>
“Interviewer: When you are confronted with problems with your smartphone, do you ask for help?
Respondent: Most of the times I just give up. When I find myself in difficulties and I don’t know how to use it, the problem is I don’t have anyone near me to show me how to use my smartphone or do this or that with that.
Interviewer: So there are moments when you really do not know what to do and where you just give up?
Respondent: Yes, it happens, and since I don’t have a computer it’s really not easy.

(Female, French speaking, 1st life category [18-30 y.o.], low education, living with parents, student, no children)

(talking about technology in general) “I would like to be able to use it yes because, otherwise you are no longer part of society; it evolves so fast that it becomes impossible to follow what is happening. You are almost obliged to have this technology. And you constantly have this feeling that... yes... it is needed but (pause), if you don’t have this technology you are completely left out of everything.

(Female, Dutch speaking, 3rd life category [51-70 y.o.], low education, living alone, unemployed, children not living at home)

For this category of respondents, the feeling of exclusion as well as the awareness of being increasingly pushed on the margins of society is strongly acute. They often feel powerless as their socio-economic situation and the challenges they face at the digital level impede their societal participation. As a result, support-deprived report, more than any other category of respondents in this study, feeling social pressured to engage with the digital. Digital evolutions occur at a rate that they have difficulty following, yet, the increasing digitization of public and private services pushes them steadily towards an increasing use of the digital, and this regardless of their inability to keep up the pace.

“Respondent: What did not help at all when I lost my job us that no one showed me how ‘Word’ worked. All they said was: ‘well now you have to make a CV’, they were literally telling me: ‘well now you figure things out by yourself’.
Interviewer: So no one at the employment agency helped you when you had to find a new job?
Respondent: No, and honestly I felt really alone. There was this one lady who took my name and my information but for the rest I did not receive any help from them.

(Male, French speaking, 2nd life category [31-50 y.o.], low education, in couple, employed, children living at home)
Henceforth, support-deprived in this study find themselves have low levels of digital autonomy; moreover, their precarity at the social level renders more vulnerable to social and digital exclusion than other groups of respondents in this research. To be clear, vulnerability is not to be interpreted in terms of victimhood; rather, we understood vulnerability as the inequalities that befall the ‘unwired side of the divide’ (Ginsburg, 2008). In that sense, vulnerability is one of the many consequences faced by those who are stripped of their agency and autonomy. As such, the development of digital autonomy is not solely a matter of policy, but an eminent social and ethical issue.

**B- Community supported**

The community-supported refer to individuals whose only source of support are computer classes (EPN/OCR12), or related computer training organized by state or municipality-funded organizations, also called digital inclusion intermediaries. Our study shows that for the community-supported, age more than education is a discriminant factor: community-supported come from all educational backgrounds but can mainly be found within this study with respondents of the 3rd life category (51-70 y.o.). They usually display low levels of digital skills, which can be explained by the fact that digital technologies are relatively new for this generation.

“...Yes, so it is not always easy. I am 66 and I think that for older people it is a real to come here and to follow computer classes, to be willing to work with the computer, I think it is unique actually. Because you should not underestimate the difficulty, all of this is quite new for our generation”

(Female, Dutch speaking, 3rd life category (51-70 y.o.), low education, in couple, retired, children not living at home)

As highlighted by the quote above, these low skill levels are coupled with a high motivation to learn. This motivation is articulated in two specific ways. On the one side, for some respondents, the decision to start computer classes is motivated by the awareness that their low digital skills expose them to potential exclusion. As told by one of the participant (Male, French speaking, 3rd life category (51-70 y.o.), Low education, Living alone, Unemployed, No children), the fear of becoming digitally illiterate, combined with precarious socio-economic situation and the need to find a job, motivated his decisions to learn to use digital technologies. Due to a severe back injury, this respondent had to find a less manual form of labor to be able to continue earning his living; this meant naturally having to engage with digital technologies. For another respondent, it was the realization that hardly anything could be done without digital media that motivated her to start learning how to use a computer:

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12 Public Computer Rooms
“You come to a point where you say, you really can’t do anything without digital media, what, especially, what that is in one, go to the GB (supermarket), there are papers, or you don’t have your card with you, then you have to go through the computer, now that has been adjusted, now they do it, a few days themselves, but you had to log in yourself and do that in time. The I think, so I want to know more about it, because you are really here like a layman and you don’t know how to pull or push a button. And that helped me also these lessons at the municipality.”

(Female, Dutch speaking, 3rd life category (51-70 y.o.), low education, in couple, retired, children not living at home)

On the other side, some respondents see in computers classes the opportunity to become more autonomous in their digital experience. This category of respondents is generally reliant on the support of their children. Therefore, their desire to be independent of the help of their children is a strong motivation to learn new skills.

(talking about his children) But it is always giving up a bit more. And, well, it is not that simple. Now it is going a bit better but, when I was in my forties and they (his children) were about 15, I have to admit that I could not do anything with technology and that was hard. (...). It is not that it was that serious, but still, I was thinking, ‘well I use to be able to do everything’ and now I have to ask my children, and I am not used to it.

(Male, Dutch speaking, 3rd life category (51-70 y.o.), high education, widower, retired, children living at home)

(talking the evolution in her digital skills) And also thanks to Digidak13 naturally I am more daring with technology, because unlike with my children, we have the same age, we did not grow up with computers.

(Female, Dutch speaking, 3rd life category (51-70 y.o.), low education, In couple, retired, children not living at home)

As developed by Kiesler et al. (2000) the dynamics of help at home can become problematic, especially when “children’s technical expertise shifts intellectual authority in the family” (2000:345). Henceforth, for this category of community users, computers rooms are vital for the development of their digital skills and autonomy as it allow them to become more independent from familial constraints. Indeed, the domestic environment, especially children, may not always be available or willing to help.

“I always try first because I usually can do it usually solve it alone. And if it does not work, yes, than my children are the next step. And sometimes, they find my questions a bit stupid I can feel it because they tell me ‘but come one! It is so simple!’ But for us it’s something else hé. They have grew up with it, hé (the technology), It is just the way it is!”

(Female, Dutch speaking, 3rd life category (51-70 y.o.), low education, in couple, retired, children not living at home)

13 https://digidak.be
C- Supported through substitution

Supported through substitution can be defined as individuals who or are unable to use and/or digital technologies through others by asking to perform the tasks they need: printing a document, sending an email, paying taxes, etc. Far from being an homogeneous group, their levels of education allows to make a distinction between two categories supported through substitution: a) those who have low digital skills and are subject to button-anxiety; b) those who lack the motivation to engage with digital tools.

**Supported through substitution with low digital skills**

This category within our research are mostly low to middle educated and rely on their social circle to engage with digital media. These supported through substitution I this research are mostly motivated by a fear of digital technologies due to low self-confidence – at the social and digital level. Their use of a proxy is mainly motivated by a fear of digital technologies due to low self-confidence, both socially and digitally, and because of negative experiences with the digital. These respondents have often had the feeling of being ‘punished’ for not using digital media, as for instance at the institutional level. One respondent (Male, French speaking, 3rd life category [51-70 y.o.], low education, living alone, unemployed, no children) revealed that he received a huge fine because he did not filled in his taxes online. He was apparently sent multiple emails but since he did not have any email adress at the time, he was unable to see the reminders. When he tried to explain his situation to the civil servant, he remembered being scolded like a child. He adds:

“I do not know my email adress by heart. So now I have it on paper here. Now I know what it takes to not to be online. I usually ask a friend of mine to check my mailbox often with me, or I ask him to log in for me like it was his homework, and to check if I have received an email or something. It is very embarrassing. I am even ashamed to find myself in this situation. It’s like I’m an illiterate.”

(Male, French speaking, 3rd life category [51-70 y.o.], low education, living alone, unemployed, no children)

**Supported through substitution with low motivation**

This category within our research is mostly found within the close family circle, and more specifically with older couples (3rd life category – 51-70 y.o.) where one spouse – in this research mostly the woman – has more skills than the other. Most respondents of this groups corresponds to what Mariën calls the ‘digitally self-excluded’: high to middle educated men and women having access to digital technologies, and to some extent the skills to use them, yet who choose not to engage with the digital because of their lack of motivation. In this research we notice that age and retirement are often put forward as reasons of digital disengagement.
“I have been retired for a while and I was first on sick leave than I took my retirement. In the meantime I have an amazing secretary (points to his wife sitting next to him) and I am happy to let everything up to her. She does everything I ask, for now at least (laughs)”.

(Male, Dutch speaking, 3rd life category [51-70 y.o.], high education, in couple; retired, children no longer living at home)

Both types of supported through substitution display low levels of digital autonomy as they are heavily reliant on their social network. Hence, a question remains: how to effectively integrate both category of supported through substitution in the digital society? Should we help them develop their digital skills in order to become more autonomous? Or should we find ways to motivate their engagement with digital technologies?

D- Network-supported

The network-supported are the most common form of help when it comes to social support. They are usually middle to high educated, between the 2nd life category (31-50 y.o) and the 3rd life category (51-70 y.o.). They mainly draw from their social networks: at home with spouses and/ or children, at work with colleagues. The key concept of understand this type of support is the notion of homophily (McPherson et al. 2001). The concept of homophily refers to the idea that ‘contact between similar people occurs at a higher rate than contact between dissimilar people’ (McPherson et al. 2001: 416). People tend to build their social networks around and with people who are most like themselves in terms of personal characteristics such as age, gender, race or educational background. Put simply, ‘similarity breeds connection’ (McPherson et al. 2001:415)

This category tends to draw support from generally homogenous networks in terms of social characteristics. Occupational positions – education and employment especially – are important in this regard as they positively influence the opportunity and the quality of the support given. Most of the middle to high educated respondents state having received precious help from co-workers. Equally, they also received formal trainings from experts at work on the use of digital media.

“Yes, looking for help... If I need help with software or something like that, I will more easily ask a colleague I know well, like: Hey, do you know how this and that works? But yeah, for the rest I’ll just ask my girlfriend sometimes, but I think that it is”.

(Male, Dutch speaking, 2nd life category [31-50 y.o.], high education, in couple, employed, children living at home)

“Oh, usually I ask Natasja or Kristoff [co-workers], Kristof most of the time because he is good with this sort of stuff and he knows what to do. So I go them with my problems and I just ask: Hey, can you help me find a solution? And in last resort, I go to the IT-helpdesk of the bank but they are almost all external so I don’t do it often”.

(Female, Dutch speaking, 3rd life category [51-70 y.o.], High education, In couple; Employed, Children no longer living at home)
At home, the network-supported tend to draw support mostly from their children and spouses.

“No, I will first try to do things by myself, try to discover things by myself and test things for a while. Sometimes it works well and other times I need help with something in particular. So, if I try and it does not work and I see that it is taking me too much time, I just ask my younger son, yes, I still have one son at home. He studies at the VUB [university], bioengineer. So, when he is home, I just ask him, otherwise, there is always one of them [his sons] that I can ask for help”.

(Male, Dutch speaking, 3rd life category {51-70 y.o.}, high education, widower, retired, children at home)

“My husband used to pay all our bills and when he died, I stayed almost one year going all the time to the bank to do my bank transfers. Everyone was always telling me how easy it was to do everything online, but no one ever showed me. And one day, my daughter came home, and she sat for an hour with me and showed me how to do it. Now I feel almost stupid when I think of how much difficulty I had before”.

(Female, French speaking, 3rd life category {51-70 y.o.}, middle Education, widow, retired, no children at home)

Network-supported in the context of family support the findings of several studies (Bakardjieva, 2005; Chu, 2010; Correa, Straubhaar, Chen, and Spence, 2013; Stewart, 2007), emphasizing the role of the family as source of support, and the importance of intergenerational exchanges of knowledge (Dolničar, Hrast, Vehovar, and Petrovič, 2013). This category also raises questions regarding the sustainability of such a form of support. For some respondents, learning in a family context is perceived as frustrating as family members—most often children—do not always have the time or the motivation to help. This frustration often results in a strong need to be self-sufficient in their use of technology and a desire to be independent of their children’s help. As such, network-supported in the context of the family are also very often the community-supported:

Interviewer: Could you give a specific example of your daughter not wanting to help?
Respondent: Let’s say that something happens. Something pops up on the bottom of my computer or my mailboxes. I’m always afraid to open it because I don’t know what might happen if I click on it. My daughter just tells me ‘When you don’t know don’t touch’ but...I don’t want to be dependent anymore. That’s the reason why I go to the EPN [public computer center] with my computer to ask questions.

(Male, French speaking, 2nd life category {31-50}, middle education, in couple, employed, children living at home)
The vicarious learners are mostly found among the 1st life category (18-30 years old), and at the beginning of the 2nd life category (between 30 and 33 years old), middle to high educated respondents. Vicarious learners show the characteristics of the network-supported in that they rely extensively in their social network to engage with digital media. But they differ inasmuch they first gain confidence from watching the digital uses of friends and family members before deciding to use technology for themselves. As such they use their close social networks as ‘local experts’ (Stewart, 2007). Writing about these local experts, Stewart argues that ‘as well as providing information these opinion leaders can also be change agents, helping develop the legitimacy of innovations by supplying subjective opinions, thus reducing community uncertainty’ (2001:550).

The opinions of these local experts are highly valued by vicarious learners as it help them reducing uncertainty and/ or anxiety in the face of an unknown technology:

“My mom work at Belfius and at first I thought I would never use their mobile banking app on my phone because you can never be too careful with your data, and then I was also confused because what happens to your money if someone steals your phone? But then my mom told be ‘no, it’s completely secured, you have to do this and that’. So actually I was afraid of having the app on my phone and generally when it’s like that then I need someone to convince me that it’s all right before I can dare to do it.

(Female, Dutch speaking, 1st life category {18-30 y.o.}, high education, in couple, employed, no children)

“Like I was saying it does not really interest me (learning to use new technologies). For example I won’t just go and download an app just like that. If I hear from friends of mine like ‘hé, Payconiq is booming, you have to get it’, when I hear friends talking like this than probably I will end up trying the app. But just go and test it for myself, no I don’t see myself doing that”.

(Male, Dutch speaking, 2nd life category {31-50 y.o.}, middle education, living alone, unemployed, children living at home)

Once the vicarious learners are convince of the validity or usefulness of digital tools, they fall into they start discovering the digital by themselves, mainly through trial and error. They equally remain a strong basis of support for the less skilled members of their social networks. Their level of digital autonomy is heavily dependent on the expertise of the local experts to which they have access: if from the start local experts are digitally skilled, then vicarious learners are more likely to be digitally autonomous.

However, the question raised by this category of support is whether this self-learning is beneficial for the development of their digital skills. As noted by van Deursen and van Dijk (2010), while people may learn effectively by trial and error, they also tend to reproduce the same mistakes online once they have achieved the goals they had in mind. If people manage to successfully achieve their goals online through trial and error, they are more likely to keep on repeating the same procedure to get the needed outcome, even if said...
procedure is based on the wrong steps. As such, vicarious learners run the risk of building questionable and weak skills when learning by doing, especially those with initially low digital competences.

F- Self-supported learners

The self-supported are a less common type of category in this research. They generally do not ask for help although they possess the network to do so. Instead, they seem to learn very intuitively, reveal high levels of self-confidence in their digital skills as well as a strong sense of digital autonomy. These types of learners in this research are general males, high educated, between the end of the 1st life category (18-30 y.o.) and the beginning of the 2nd life category (31-50 y.o.). The self-supported in this research work closely and on a daily basis with digital media, which implies that they have access to high quality equipment. They tend to easily stretch out of their comfort zones to learn new things, mainly by browsing online (e.g. tutorials on YouTube):

“I will for example try out something new if I hear like someone saying ‘hey that stuff or app is quite cool’ than I’ll probably want to test for myself to see if it fits me, and if it fits the way I like to work’.

(Male, Dutch speaking, 2nd life category {31-50 y.o}, high education, in couple, employed, children living at home)

Self-supported constitute a prominent source of support for their social networks. They form the support basis of the network-supported: they are often the co-workers or the digital experts giving in-house trainings. Henceforth, the concept of homophily plays again a significant role as this high quality support tends to be given within highly homogenous social networks. As shown by Yuan and Gay (2006), homophily has a strong influence on the creation of learning communities. As the likelihood of social interactions increases among similar people, so does the formation of network ties when it comes to a learning community: ‘developing [learning communities] requires free formation of network ties among all members of the community regardless of individual differences in demographic, social or geographical background. But homophily is a double-edged sword: it unifies people sharing the same characteristics, but it divides people with different characteristics’ (Yuan and Gay, 2006,1077). By assisting their social environment with the use of technologies, self-supported learners act as gatekeepers in the distribution of knowledge that enables some people to develop their digital skills (Stewart, 2001, 2007). Policy interventions should thus consider this type of support as pathway to digital inclusion for the non-users lacking the resources to ask for and receive help.
Our research shows thus that education, more than age, has the most direct effect on social support. The different forms of support outlined above partially confirm the assertion of Helsper and van Deursen (2017) according to which ‘those with higher levels of education are almost always of the ‘right side of the digital divide’ (van Deursen and Helsper, 2017:703).

However, our classification also allows to nuance such claims by outlining a category of respondents that Mariën and Baelden (2016) call ‘Unexpected Digital Masters’. These ‘Unexpected Digital Masters’ as demonstrated with the community-supported, refer to lower to middle educated respondents in this research who, despite their social and digital difficulties, show high levels of interest and motivation to engage with digital technologies. These positive attitudes in turn are translated in their daily lives by conscious efforts to develop their skills through computer classes, by asking for help for even through trial and errors.

“So I started learning about internet first out of interest naturally and I progressively learned to do more stuffs with like a photo album or managing my documents and the like. And it is not just about internet, but also I followed a course on how to make an email account, or how to use a smartphone. It is not just because you can’t do anything outside of it these days, that is another discussion, but it is, well it does interest me”.

(Male, Dutch speaking, 3rd life category [51-70 y.o.], middle educated, in couple, retired, children not living at home)

What sets this category apart from its peers is the availability of potential support. Indeed, the common denominator is the presence of a source of help – used to not – in their environment that allows them to be more resourceful with the digital.
“Usually when I am stuck with something I call someone; but I always try to solve it myself first and sometimes I manage to fix something by myself and I can say ‘oh-oh, no need to come and help me, I already know what to do, and then I am so proud of myself of daring to try out stuffs you know. Plus my ex-husband, when I started using the computer was always telling me ‘you have to dare more, dare to click and see what happens’. So now I click and if it works, it works, if it doesn’t, it doesn’t, and very often I find that I can actually do things with internet so I can tell him ‘hey no need to come, problem solved’ (laughs)”.

(Female, Dutch speaking, 3rd life category {51-70 y.o.}, middle educated, living alone, unemployed, children not living at home)

(talking about his brother) “So a year and a half ago, my laptop that I had for 3 years and a half start behaving weirdly. The hard drive was broken. But I was able to save all my documents, actually, not me but my brother, he installed a new hard drive that was so much faster than the other one. So whenever I have problems like connecting to the internet or checking my email adress”

(Male, Dutch speaking, 3rd life category {51-70 y.o.}, low educated, living alone, retired , no children)

As such, while rich may get richer in certain circumstances, our classification highlights the leveling effects of social support with these ‘Unexpected Digital Masters’ Mariën and Baelden (2016) beating the odds of engagement. Henceforth, our research makes it clear that issues of digital in-exclusion are not just technological but also social insofar as they entail the diversity of formal and informal support networks that have a great influence on the adoption or rejection of digital technologies. Understanding digital engagement requires thus a focus on the wider context of the non-digital lives of the participants (Miller, 2018). In line with Kazmer and Haythornwaite (2001) we argue that to understand digital inequalities it is vital to situate digital uses within individuals’ lives; this we believe include paying attention not only to the technology but also to the social environment within which individuals flourish.

![Social Support Diagram](image)

**Figure 17**: Hypotheses H4a – partially verified and H4b – not verified
4.3. Reconsidering digital autonomy

Digital autonomy is defined within digital inequality research as the freedom to use technologies when, where and how one wishes (Hargittai, 2003). From this perspective, digital autonomy is perceived as well as an attitude towards the learning process, as a capacity or competence to be developed. Either way, this view on autonomy poses an incredible burden on the shoulder of individual users whose learning process becomes a personal responsibility. Put differently, the current standpoint on digital autonomy places a strong emphasis on individual users, making it their responsibility if they do not demonstrate gradual autonomy and interest in the learning process.

In light of our findings, this deliverable nuances and widens the definition of digital autonomy in three ways: 1) by recognizing autonomy as relational and social; 2) through the understanding that autonomy is a subjective experience; 3) by redefining autonomy as opportunity-oriented.

1.1.22. Digital autonomy is relational and social

The notion of autonomy stems from liberal theories that understand human beings as self-made and self-making. As such, this liberal understanding of autonomy has negatively affected the interpretation of digital autonomy insofar as digital autonomy is too often approach and an individualistic perspective. Indeed, autonomy is usually perceived as a state that individuals should opt for in order to live better life. Yet, approaching digital autonomy from an individualistic perspective forgoes the impact of the social environment and reports the pressure to be autonomous on the individual user. Instead, we argue in this deliverable that autonomy is not solely a matter of the individual but it is an eminently social project. Autonomy is always developed in relation to, and with the participation of others. As such, autonomy is not a state or a quality to be possess; rather it is a process. People are not autonomous but they become autonomous through the social relationships that sustain them: family, friends, co-workers, etc. As pointed out by Nedelsky (1989), people are not self-made; rather the social is constitutive of the individual and is a prerequisite for the development of autonomy: “we come into being in a social context that is literally constitutive of us. Some of our most essential characteristics, such as our capacity for language and the conceptual framework through which we see the world, are not made by us but given to us (or developed in us) through our interactions with others” (Nedelsky, 1989:8). Henceforth, autonomy is developed in contact with others. As highlighted in our in our typology of support sources, the individuals in this research showing the higher levels of digital autonomy are the ones who are the most socially embedded: network-supported, vicarious learners, self-supported. Furthermore, since digital autonomy is a process and not a state of being, it means that it has to be fostered in order to be maintained. Put differently, being digitally autonomous is not an end in itself but is it an ability that must be nurtured through lifelong learning. As such, it is important at the policy level to recognize these social interactions in which digital autonomy can flourish: with EPN/OCR learning communities, on the workplace, at home with relatives. These intermediaries are ley to develop e-inclusion policies tailored to the needs of individuals.
1.1.23. Digital autonomy as a subjective experience

While we acknowledge that autonomy is an ability to be nurtured, we content that this ability is ineffective without the actual feeling of autonomy. Autonomy as a subjective experience points out the fact that people need to feel autonomous before actually expressing the ability to be autonomous. This belief that one can achieve something, what Bandura (1977) calls ‘self-efficacy’ is a crucial aspect of digital autonomy. Unless individuals feel that they can produce the desired effects through their actions, they have little incentive to act. In other words, unless people have a sense of autonomy and control over their own lives it is unlikely that they will display signs of autonomy at the digital level. When looking at the individuals in this research who score the lowest in terms of digital autonomy (i.e. support deprived, supported through substitution), it is not per se their physical abilities or intellectual capacities that are the issue; rather, their negative experiences – whether at the social or digital level – with institutions, close or distant social networks have restrained the development of their digital autonomy.

As aforementioned, most respondents within these categories of support have either had disastrous encounters with the digital (i.e. being scolded for not having a computer) and/ or find themselves in social situations where it is difficult for them to be in control of their own lives (e.g. jobless, retired). In such situations, the sentiment of losing control over one’s life affect the capacity to become autonomous at the digital level. Put differently, the capacity to exert an autonomous behaviour online is not only hindered by inequalities in access and/ or use of technology; systemic inequalities such as poverty or discrimination have an effect on the digital lives of users. In line with Nedelsky (1989) we argue that “we cannot understand or protect, much less reconceive, autonomy unless we attend to what gives citizens a sense of autonomy, to what makes them feel competent, effective, able to exercise some control over their lives, as opposed to just feeling passive, helpless, and dependent” (Nedelsky, 1989:25).

1.1.24. Digital autonomy as capability

The overemphasis on independence as a marker of digital autonomy is misleading. Digital autonomy is not just about using technology in an independent manner; it is about having the ability and the possibilities to make the choices one desires. More than a mere capacity, we consider digital autonomy from the capability approach of Sen (1992; 1995), putting thus an emphasis not just on the freedom to use technology when and wherever (Hargittai, 2003) but more importantly on the freedom to live the life one desires.

As such, understanding autonomy from a capability perspective allows us to stress how address two important points. First, a capability approach to digital autonomy stresses the ability of individuals to make the choices and cease the opportunities that are best suited to their styles and ways of living. In so doing, it sheds light on the people for whom such choices remain inaccessible because specific features of life such as income, education or skills impede their abilities to voluntarily decide how to conduct their lives.

Second, highlighting the issue of choice puts an emphasis on a distinction between what we call content – that is individuals’ preferences or desires, and what we term form – the processes through which these preferences or desires are transformed into actions. Paying attention to concepts of content and form reveals that not everyone is equals when it comes to making choices insofar as not everyone is able to transform a desire – ‘I want to have access to my bank account’ – into action – ‘I use my smartphone to log into my mobile banking app’.
The capacity to choose is what makes us autonomous beings. Yet, it is not the sole province of the individual as room for choice must be provided by society; as stated by Ells (2001) “having and respecting autonomy requires anticipation by others of what is needed to make the choice in question and facilitating that choice accordingly” (Ells, 2001:615). Therefore, digital autonomy cannot be expected from individuals if they have not been given alternatives suited to their personal standards or norms. Put differently, when the social norm ‘you have to use digital technologies to be part of society’ superimposes the personal norm ‘I want to choose in which domains I want to use digital technologies’, then autonomy cannot be achieved. On the contrary, by pressing people toward more digital, or rather by giving increasingly less alternatives to the digital, the risk of pushing individuals toward self-exclusion is real. Individuals will, as a consequence of feeling coerced, be more likely to opt out and disengage from the digital.

“ Well, now to be able to function in society or even to get the chance to have a good job you have to have an email address for example. If you don’t take part to all this digitalization, well you are completely left out of society. And I think that it limits people in their evolution with technology, at least in my opinion, in the sense that it forces people to evolve towards something they would rather not do, so in the end they just abandon altogether”

(Male, Dutch speaking, 1st life category {18-30 y.o.}, middle education, in couple, employed, no children)

Hence, enabling individuals to become digitally autonomous is a gradual process. It is a process that needs to be focused on what people need, on what is essential to them as individuals and not on what they ought to do.

**RETHINKING DIGITAL AUTONOMY**

**Facilitates digital autonomy**
- Social support
- Availability of a range of options/alternatives (digital and non-digital) on which to use and access a variety of services.
- Transforming desires into actions --> focus on the needs and wants of the individuals.
- Time and appropriate spaces (networks) to develop autonomy

**Constraints digital autonomy**
- Lack of social embedding
- Pressure and coercion
- Inability to transform desires into action
- Structural inequalities (income, education, etc.)

*Figure 18*: Reconsidering digital autonomy
SECTION 5: FACTORS OF DIGITAL ENGAGEMENT
THE IMPORTANCE THE INTIMATE
5. Geometries of the intimate

“The main consequences of the proliferation of new media channels for people’s everyday lives is not necessarily the extension of new social connections on a global scale or the cultivation of social capital, rather the intensification of a small group of highly intimate relationships that have now managed to match the richness of their social connectedness with a richness of multiple communication channels. The transformative nature of digital communication channels as means of shattering the limitations of the local is therefore not perceived as a means of transcending existing ties, but as a way of achieving something else: the possibility to expand the co-present into the remote and thus maintain relationships that are emotionally close but geographically distant” (Broadbent, 2016:131).

The previous section has looked to mechanisms of in-exclusion from bottom down perspective – that is moving the theoretical framework developed by Mariën and Baelden (2015) to the data gathered during the in-depth interviews. Based on this framework, the previous section as offered a reflection on the interrelatedness of mechanisms of (in)exclusion at the social and digital level, by showing, through qualitative data, how different types of inequalities intersect, thus reinforcing existing vulnerabilities and/or creating new ones. The previous section ends up on a critical re-assessment of the concept of digital autonomy, moving away from seeing autonomy as a state, to considering autonomy as a process in need of constantly being sustain and develop.

This section constitutes the bottom-up approach of this deliverable: we start from our observation of the data to question and further the scientific knowledge on digital inequalities. In this section, we put an emphasis on how digital technologies are associated with the production and shaping of new forms of intimacies. Hence, this chapter focuses on the complex relationships between digital technologies and the social, their interactions and the ways in which they gain their meanings. Put differently, how do people construct and sustain intimate relationships within the familial sphere – between spouses, with children – through the mediation of digital technologies? How have digital technologies become a space in which new practices of intimacy are emerging?

To answer these questions, we use the concept of polymedia (Madianou and Miller, 2013) to understand how people navigate this media-rich environment, and how this navigating is linked to the way that interpersonal relationships are enacted, managed and experienced. Until fairly recently, communicating at distance meant choosing between a very limited set of media, usually determining whether to send a letter or make a phone call. As a result, people were very much constrained by the specific propensities of the medium available for communication: with the extensive time lag between the sending and the receiving of a letter, and the cost of overseas phone calls, people were quite aware of the outlays and the restrictions that their choices of medium implied. Yet, with the technological advances there has been a surge of the manifold possibilities of communication, from text messages, to video chat or conference calls. As these technologies expanded, users became less and less aware of the costs associated to a single act of communication, and more responsive to the possibilities for action laid out by this new media environment. Polymedia refers thus to this “profound transformation in the usage of increasingly converging communication technologies” (2013:2) and is developed to describe and understand “the emerging
The concept of polymedia speaks of this integrated environment of affordances (Hutchby, 2001) and focuses on the possibilities for action offered by digital technologies rather than their sheer physicality or perceived effects. Put differently, rather than just paying attention to the what type of digital technologies are being used by the participants, the concept of polymedia allows us in this section to insist on the very possibilities of action afforded by the medium being used: an individual with a smartphone for instance automatically has a variety of ways to communicate with others — voice notes, SMS, phone calls, Facebook-Messenger, etc. — to fulfill his/her communication needs.

The focus on the intimate in this section highlights two main observations important findings of this research. Firstly, what is interesting in the growing use of digital technologies in the intimate sphere is the remarkable diversity with which people combine and adapt technologies to fit their needs: with the multiplicity of digital channels rendered available by technological changes, what cannot be achieved via email will be conveyed via a WhatsApp voice note or a text on Messenger. This diversity of use highlights how digital technologies are gradually involved in and integral part of what we terms the geometries of the intimate — the web of structures constituting the intimate lives of individuals. We term this first finding ‘Finding presence in absence’ (5.1). Secondly, what appears striking in the geometries of the intimate is that, in combining various media to meet their communicative needs, participants in this research actually put less emphasis on the equipment through which these needs could be achieved and much more on the possibility of accessing their loved ones through a variety of services independently of the equipment chosen. Put differently, when asked about their daily digital practices, we observed that for our participants, regardless of age, skills and/ or education, connecting to internet via a laptop or a smartphone was of secondary importance; rather, nurturing the sense of ‘presence-in-absence’ was sought out and performed through the services perceived as being the best suited to convey a specific emotion or message. We term this the shift in access: from platforms to services (section 6)
5.1. Finding presence in absence

Intimacy is often narrowly defined as resulting from close association with a significant other (friend, spouse...). This close association is usually understood as exclusive to the domestic sphere and imagined in the form of living arrangements such as for instance the rearing of children, sexual intercourses or strong emotional attachment (romantic love, platonic relations...). While intimacy is all of the above, it is also more than the above. Intimacy speaks of a particular form of closeness found in self-disclosure and in the sharing of personal or private material with one or multiple others (Jamieson, 2007; 2011). This participation in conversations of mutual self-revelations create a quality of relationship so intense that it goes further than the simple knowledge or acquaintance of someone.

With the development of technology, this closeness provided by the time spent opening oneself to others has taken on new forms. As highlighted by Baym (2015), there has never been more ways to communicate with one another: “once limited to face-to-face interactions, over the last several millennia we have steadily developed new technologies for interaction” (2015:8). Face-to-face conversations, postal briefs and landline phone calls have been supplemented by video chats, instant messaging, multiplayer gaming and conference calls. This reflects the ways in which digital technologies are involved in the changing nature of social connections and interactions. When looking at personal relationships, we observe in this research an increasing use of digital media to sustain existing relationships, to keep contact and stay in touch, exchange news about each other’s activities and organize daily life.

“Yes, and as I said now with WhatsApp I actually share a lot more with my family and friends, and I also am more aware of what they do because we are constantly sharing things in WhatsApp. Then I let them know things like ‘Ah I passed my exams’ or ‘I won this race’ or ‘I did that today’. So I do find it a nice evolution, that you can share things online as a family”

(Female, Dutch speaking, 1st life category {18-30 y.o.}, high education, in couple, employed, no children)
The quote above shows how digital technologies, by extending the opportunities for daily meaningful contact, reconfigure the ways in which people relate to one another. Indeed, when looking specifically at personal relationships, we observed during our research an increasing use of digital media to sustain existing relationships – friendships, family, etc. – to stay in touch and exchange information over each other’s activities, to micro-organize the domestic – ‘when will you be home?’ ‘can you pick up some bread on the way back?’ For the participants in our research, all age and educational levels taken together, daily interactions and exchanges are usually taking place via micro social apps such as WhatsApp groups, FaceTime or Messenger, services through which they communicate with one other and/or organize their daily activities. As one of our respondent (female, French speaking, 1st life category (18-30 y.o.), high education, in couple, employed, no children) puts it, digital technologies have induced a new way of communicating with close social networks: sharing pictures, and the possibility of being constantly in contact give to our participants the feeling that they are able to know more about each other’s lives and therefore they can grow more intimate with one another. This emotional need to maintain and foster a close sense of connection is even more significant for a) those living together but spending more time apart because of school or work – Living Together Apart – b) or those who, while being separated by geographic distances, want to maintain a sense of togetherness – Living Apart Together. This possibility of finding ‘presence in absence’ through digital technologies is an interesting element to observe insofar as it reveals how the use of digital technologies is sedimented in daily life. To be clear, digital technologies are only re-enactment of traditional practices of intimacy (Hjorth, 2012), – e.g. sending lover letters; nevertheless they add a new dimension to social interactions insofar as they offer a way to be together while being separated in a manner that flowers or love letters can only express with more difficulty.

In this sense, the repertoires through which intimate practices are enacted are essential in explaining digital inequalities and digital inclusion. It is not enough to provide hardware, instead there is a need to grasp what motivates people, what they desire, in order to tailor digital inclusion approaches that accurately answer to their needs, such as intimate relations have shown to be.

1.1.25. Living Together Apart

With the changing patterns of traditional relationships, families in contemporary societies, tough living together, spend more time apart: the time spent commuting from work to home, from school to home, stretches the period spent apart for family members who are only able to see each other once they are back home from their various occupations. Digital technologies broaden the range of opportunities for family members and friends to stay in contact while being locked in different time-space continuum. These online exchanges, via tools such as WhatsApp group chat or Facetime, add a new dimension to their use of digital media by rearticulating practices of everyday life and lived spaces. For instance, it allows partners or spouses, while being apart for work or school to instantaneously exchange news and information about their days or to organize their daily activities (grocery shopping, social events...).
(talking about his use of the smartphone in daily life) “And for the rest, yes, I have to say, well I use it to a text to my wife life ‘Hey, did get to destination without problems?’ Or with my children. Actually, my children have installed a number of things on their tablets, things like Instagram or WhatsApp, and they use their tablets when the battery of their smartphone is flat, but actually I use WhatsApp more often to talk to my kids, also because I know: send texts messages and they won’t answer to it. Don’t even try calling them. By the way, I don’t know if this is a general phenomenon, but calling them with the smartphone is the hardest thing ever (laughs).

(Male, Dutch speaking, 2nd life category {31-50 y.o.}, high education, in couple, employed, children living at home)

(talking about her son) “For Nicolas it is very useful certainly, because when I want to let him know like ‘listen I can’t come pick you up from school today’, I just send him an SMS, because he can’t really use his phone at school so I won’t call him, so actually we end up communicating a lot via SMS to fix certain things like who is coming to get him from school or what bus should he take to go home if we can’t pick him up from school.”

(Female, French speaking, 2nd life category {31-50 y.o.}, middle education, in couple, employed, children living at home)

“So using digital technologies with my family yes, and in my love relations yes also. Well, I am not yet living with my boyfriend but then if we want to meet, then usually we will text each other. And also with our respective families for example, we are asking in our group chats stuff like ‘what are we eating tonight?’ or ‘should we eat out tonight?’

(Female, Dutch speaking, 1st life category {18-30 y.o.}, low education, living with parents, student, no children)

The above mentioned quotes thus show how digital technologies allow individuals to micro-organize the domestic: ‘When will you be home?’ ‘Can you pick up some bread on your way back’. Yet, beyond the mere sharing of information, the use of digital technologies for those Living Together Apart allows them to extend themselves in time and space by engaging directly with those they care about and who are located in a different time-space continuum. While services such as instant messaging or group chats have the advantage of being significantly cheaper than traditional telephone calls, they also grant the possibility for family members to have even more private forms of communication. These interactions being usually not mediated by another family member, individuals have the possibility of knowing each other and communicate with each other on a ‘one-to-one’ basis in the most literate sense of the term. This possibility of communication as Wajcman (2009) argues creates a sense of connection and heightened intimacy that intensifies the feeling of living linked lives despite the temporary distance. Broadbent (2016) likewise points out that the intensification of exchanges between individuals and their loved ones is emotionally intense and the feeling of being always within reach provides safety and comfort. Therefore, keeping in touch with close family members while being apart suggest that the specific uses of digital technologies are pointing to particular kinds of intimate relations but also help constitute these intimacies. In this sense, the digital stretches the
limits of the domestic by extending the level of the intimate outside the traditional boundaries of the home. In so doing, it provides an alternative territory for the unfolding of the everyday.

1.1.26. Living apart together

When physical separation is more than temporary, participants in this research still manage to maintain a sense of emotional attachment to their loved ones. Indeed, digital technologies can provide a space for intimacy and ‘togetherness’ that compensate from the fact of being separated by geographic distance. This type of intimacy accommodated by digital technologies allow individuals to “keep in touch with people with a level of regularity and intimacy that you wouldn’t usually have access to because time and space conspire to make it impossible” (Reichelt, 2007)17. Digital technologies provide ways to be separated but together by fostering long-distance relationships with family and friends, harboring a sense of belonging, of shared space and time, of proximity.

“Now with our group chats on WhatsApp we are more organized than before, in the sense that, before, my brothers were not usually aware of events in the family because they are no longer living with us at home, or they had forgotten at what the family reunion was supposed to be; but now for example in the WhatsApp group you can say, well yes, the event is this Saturday a with so-and-so, or with mom we’re going there and there and then they respond, you start answering back like ‘Oh yes I can’t wait’ so, yeah, you notice more interaction, more communication. So that is really cool, and also just like, not everyone still lives under the same roof, so you hear more of each other and that is cool, and you can really share moments with each other, then you can also talk more about it afterwards.

(Female, Dutch speaking, 1st life category {18-30 y.o.}, middle education, living alone, student, no children)

The following respondent has lost his job a few years ago and has since had difficulty falling back on his feet. In the same year of losing his job, this respondent also went through a painful divorce where he lost custody of his son. Due to his unemployment, he got evicted from his apartment because he was unable to pay rent. At the time of the interview, this respondent was living on the streets and coming to computer rooms – where the research team met him – to receive help with his smartphone. This smartphone is in a lot of ways the only window to the world, as he does not have any other tool of communication. In the following excerpt he is discussing the use of his smartphone to keep in touch with his son who recently moved to the United States for his studies:

“And then I can chat with my son via WhatsApp; he is in the States now. It is really handy because we can talk about things, I can ask about his studies and of all his projects over there and I can support him even if he is 10km away from me”

(Male, French speaking, 2nd life category {31-50 y.o.}, low education, living alone, unemployed, children no longer living at home)

17 http://www.disambiguity.com/ambient-intimacy/
For the participants separated by distance, there is thus a strong sense of ‘presence-in absence’ for which people invest time and efforts to ensure that their loved one stay at the forefront of their minds throughout the day (Veter, 2005). The possibility of this ‘co-presence’ sediments the use of digital technologies in the daily life and embeds the digital in everyday routines: “Mobile media play a key role in maintaining older forms of co-present rituals as they produce new ways for people to cope with the geographic displacement or physical absence” (Hjorth, 2012:22). It equally highlights three essential features of the intimate: sharing, loving, caring. Intimate exchanges always involve an act of sharing: sharing of information, pictures, or comments. This act of sharing, far from being mundane, help people feel connected to others and reinforces social connections.

“...Yes, so relationships among family members: WhatsApp of course. Nowadays everyone has such a group with their relatives, on both sides of the family and it is very easy. (silence). You do not see each other every day, or you not hear each other every day, but through that it is all much more accessible, and it is always fun to share a photo once, or some silly stuff, and that makes the atmosphere and the relationships all the more relaxed”

(Male, Dutch speaking, 2nd life category {31-50 y.o.}, middle education, in couple, employed, children living at home)

Digital technologies allow close ties to communicate their love, concern or care for each while being apart. These intimate acts as primary access to social support: being able to keep in touch with one’s network means being able to reach out for help when needed, to cultivate and garner the resources necessary through the social network. In this light, these new cartographies of the intimate show how digital media are contributing to new ideas and experiences about friendship, marriage and family life (Chambers, 2003). As new meanings and intimacies emerge, two key observations can be made. First of all, mediating intimacies are not something new. By definition, intimacies have always been mediated through love letters, postcards or even flowers. Digital technologies only re-enact earlier practices of intimacy “by providing new ways to do older things” (Jamieson, 2013:9). Second, digital media do not replace existing means of communication, nor do they render social contact obsolete. Rather, they add new layers of intimacy to existing relations or networks and supplement social connections when physical contact is unavailable.

However, the increased possibility of contact can also bring about a sense of pressure and coercion to be always connected. Although greatly enjoyed, the expectation to share everything and to be always available online for discussions can lead sometimes to a feeling of entrapment (Hall and Baym,2012). Looking at friendship expectations amongst teenagers, Hall and Baym(2012) discuss the double-edged sword that is mobile communication: one the hand mobile communication through WhatsApp enhances social cohesion, creates a feeling of presence in absence and can allow individuals to keep in touch despite geographic distance; on the other hand, constant contact and communication can also create a feeling of entrapment as perpetual connection is expected to be the mode ‘by default’. Put differently, digital technologies having become ubiquitous, the ‘always-on’ mode – the assumption that one is (or should be) always online, that relationship should be maintained via constant text messaging or phone calls – can lead to a feeling of
imprisonment (Hall and Baym, 2012). This feeling of coercion or imprisonment is thus the focus of the following section.

1.1.27. The pressure of endless possibilities

Technological innovations have brought about enhanced possibilities in terms of contact and communication with one’s social network. The desire to maintain a presence-in-absence is one of the main reasons why people turn to the use of mobile media. Across the spectrum of respondents to this research, almost all of them, regardless of age and/or education, possess a group chat—on either WhatsApp or Messenger—used to communicate with close ties such as family, friends or spouses. While this fulltime contact is seen as an opportunity, it can also be experienced at the same as a constraint and a potential source of tension. To be clear, these tensions between remaining closer through technology and feeling entrapped by technology (Hall and Baym, 2012) are not mutually exclusive. Rather it is a dialectical tension, that is to say a tension born out of contradictory elements: on the one hand enjoying the advantages afforded by perpetual communication, and on the other hand feeling obliged to participate in this perpetual contact (Hall and Baym, 2012).

The respondent below is being asked how she would define the broad term: digital technologies. She cites what she consider part of this umbrella term (e.g. computer, smartphone, etc.) and reflects on whether all these technologies really makes life easier. She argues that, although she appreciates the advantages afforded by technologies such as WhatsApp, she argues that this need of constantly communicating via these applications is not always useful and does not make life much easier. According to her, these technologies create more expectations as people expect one to be constantly available:

“W ell for me, this constant communication via Messenger and the rest is not necessary. But that is purely my opinion, because I think that they create this expectation in others that you should always be available, and that is constantly expected of you; it is constantly expected that you will answer quickly, like in the minute to a text, everything has to go very fast and I have a problem with that; so perhaps my problem is not per se with the technology itself, but more with the expectations that people put into it, that idea that it makes life easier. In the end, for me an SMS is as good as Messenger you know.”

(Female, Dutch speaking, 1st life category (18-30 y.o.), low education, living alone, employed, no children)

At the heart of this pressure is the ‘anytime, anywhere’ availability afforded by digital technologies. On the one hand the endless possibilities in terms of communication are associated with positive feelings about intimacy and proximity; yet on the other hand, the constraining nature of these endless possibilities for communication creates a feeling of entrapment (Hall and Baym, 2012), of being prisoner of one’s device. This feeling of entrapment as highlighted by the quote above, is very much linked in this research to the expectations of close networks on an individual: the expectation that one will always be within reach, that one will always be available for communication.
“And since I have a smartphone that I always have on me, I have the feeling of being harassed by the outside world because when someone calls I pick most of the time, and sometimes it really annoys me to answer and I just want tell that person, ‘listen I don’t want to talk right now’; so yes, having a smartphone or not, in both cases they are advantages and disadvantages.”

(Male, French speaking, 1st life category {18-30 y.o.}, middle education, living with roommate, employed, no children)

“...Well I think that being accessible is a very good thing. But sometimes it is also, well it can be also too much. That also depends from day to day. You can get ten phone calls in a row, and you’d rather have seven of them so to speak. And other days it can also be quite, so... yes something is very good but at the same time sometimes it is not such a good thing.”

(Male, Dutch speaking, 2nd life category {31-50 years old}, high education, in couple, employed, children living at home)

Although it remains the liberty of each individual to decide how and when to make use of the endless possibilities of contact afforded by digital technologies, ‘opting out’ of perpetual communication becomes less of an option when ‘always on’ accessibility is transformed into normative behavior. (Mascheroni and Vincent, 2016). When perpetual contact and fulltime instantaneous availability is grounded in peer pressure, that is to say becomes expected at each social encounter, then it acquires a normative character. This normative character of availability explains why certain individuals feel the maintenance of relationships through digital technology as an obligation; this pressure to be available at all time is reinforced by the expected reciprocity whereby one has to answer when being notified, either via instant messaging or phone call. Failing to reciprocate could thus be interpreted as a disregard of a certain ‘etiquette’ and cause tensions or misunderstandings in relationships.

This respondent discusses the use of digital technologies in his private relationships, notably with his girlfriend with whom he has not yet moved in:

(talking about his girlfriend) “yes, sometimes I feel that we have to be way too much accessible for each other, but also for friends. Because sometimes I just want to go and sleep early. You may just want to turn off your stuff, like your computer or your smartphone, but people also expect that you somehow will be reachable. If you are talking with one another all the time, they will expect you to keep on answering over and over again”.

(Male, Dutch speaking, 1st life category {18-30 y.o.}, high education, in couple, employed, no children)

These expectations are heightened by the fact that, when it comes to instant messaging for instance, the sender is immediately notified that his/her message has been read. There appears thus to be no escape from this communicative environment. The pressure to reciprocate is enhanced by the guilt of not responding to contact, what some respondent have framed as the fear of missing out. This fear of missing out is one the reason why some respondents explain that it is so difficult for them to switch of their mobile phone for instance, if only for an hour. The fear of missing a call, of skipping important information defines their
dialectical relationships with digital media at the same time praised for the connectivity they bring about, and disproved for the dependence they induce.

“You know, when you have something to do, or a deadline approaching, then yes, it is very nice to be always reachable. But in many other areas of life sometimes I’m thinking well at this moment I could of course switch off my phone but of course I don’t do it... I don’t know, the fear of missing out on things maybe? I don’t know…”

(Male, Dutch speaking, 2nd life category [31-50 years old], high education, in couple, employed, children living at home)

While the expectations of the social environment play a big role in the feeling of entrapment experienced by respondents in this research, the quotes above also show that this feeling is very contextual; it is not to say that technologies are all bad or all good: rather their perceived effects is very contextual. This nuanced vision is very interesting to see as it points out – for policy and academic research – first to a better understanding of the contexts in which people use technologies. The use of technologies and the experience thereof is far from linear; rather, additional factors such as the social environment, the emotional and mental wellbeing of users play a role in the use of technologies. These additional factors should equally receive more attention when looking at mechanisms of in-exclusion. Second, digital inequalities studies very often focus heavily on quantitative studies measuring difference in access and use with socio-demographics as indicators. Yet, what this research shows is a) that mechanisms of in-exclusion go much further than mere socio-demographics; instead, personal features such as soft skills or mental wellbeing can drive the adoption of technologies in everyday life (Helsper, 2017; Mariën and Baelden, 2016); b) this research also highlights the fact as much as people’s everyday life is fluid, rather than static, so is their use of technologies.

In that sense, the geometries of the intimate allow us to appreciate how individuals and households are making sense of and integrating digital technologies in the everyday life. With the proliferation of new media or polymedia (Madianou and Miller, 2013), individuals choose and combine an array of equipment and services to achieve specific communicative purposes. For example, what cannot be done via email, will be accomplished via conference call or another platform. As such, what makes a technological artefact significant is not what it ‘is’ in itself – its technical characteristics – but rather what it enables or affords (Mascheroni and Vincent, 2016) – face-to-face communication, voice notes, etc.

This research further shows that access to digital technologies is no longer about the equipment or technological artefact – e.g. computer, smartphone– but about the possibility of accessing the services needed to achieve specific purposes – e.g. communicating with friends, video-chatting. This shift in access is the focus of the following section.
SECTION 6 : RETHINKING ACCESS: FROM PLATFORMS TO SERVICES
6.1. The traditional concept of access

“Access to the internet is just half of the picture. What people do with the internet once they have access must also be considered. Therefore, it is clear that internet usage should not be conceived as a simple unitary opportunity: people are not simply internet users. Different kinds of people make different use of the range of applications and services that the internet supports and probably for differing reasons. Thus, the average internet user simply does not exist” (Haddon and Trace, 2001:23)

The concept of access has always been the main focus of traditional digital divide research. In fact, the digital divide was initially framed in terms of access, as a binary distinction between those who have access to the internet - the haves - and those who do not - the have nots (DiMaggio and Hargittai, 2001). With the democratization of technology and as more people began to have access to internet, researchers and policymakers started noticing that certain categories of people (white, male, wealthy, ...) were more likely to use the internet than others. With this strong differences among people with formal access, the debate on the digital divide evolved to encompass issues of inequalities and differentiated skills and uses on the web: “digital inequality refers both to how existing social inequalities shape the adoption and uses of communication technologies as well as how different uses of these technologies can influence social stratification” (Hargittai and Hsieh, 2013:141). In this section, we present an overview of the evolution of the digital divides and look closely at how access is framed within each of these evolutions.

6.1.1 First level digital divide: inequalities in access

With the progressive democratization of the internet in the 90s, popular debates held that the development of digital technologies would lead to an information revolution that would change the way people live and interact with each other. However, as more and more people gained access to digital technologies, observers noticed that certain kind of individuals were more likely to use the internet than others (Hoffman and Novak, 1998; Bucy 2000).

The first level digital divide became thus defined as ‘the gap that separates segments of society as well as whole nations into those who are able to take advantage of new ICT opportunities and those who are not’ (OECD, 2000:3). This first level was based on the assumption that access to and use of digital technologies was solely a matter of having access to internet (Halford and Savage, 2010). In this first level divide, the concept of access is thus understood literally as whether a person as the means to connect to the internet if (s)he chooses so (DiMaggio and Hargittai, 2001). In that regard, access in the first level digital divide is heavily focused on the provision of physical access to the internet (computer, broadband, etc.). Indeed, with the focus on unequal (physical) access to the internet, the first level digital divide understood inequalities as problem only from the vantage point of the digital; put differently, the inequalities observed in access to internet were not linked to existing social inequalities present in the offline realm; rather, they were solely perceived as a matter of differences in technical apparatus. Moreover, the definition of the digital divide as a gap the ‘haves’ and the ‘have-nots’ propelled research paradigm – both in policy and academic circles – focused on understanding inequalities purely in terms of binary oppositions: rural versus urban areas, rich versus poor, male versus female (Hargittai, 2008; DiMaggio and Hargittai, 2001). This binary framing on also implied that inequality in access was studied solely from the viewpoint of socio-demographics. Yet, as
As such, understanding inequalities related to the digital moved from differentiating who is in and who is out, to defining inequality by distinguishing who, among those online, have the capacities (and the resources) to develop the technical knowledge required to ‘exploit the internet’s potential and avoid frustration’ (Hargittai, 2002). Hence, having access to technology remained, even within this second-level digital divide, heavily focused on the provision and mastery of physical equipment.

6.1.2 The second level digital divide: inequality in skills and usage

According to Hargittai (2008), in order to understand digital inequalities, there is a need to move away from the dichotomy of the first level digital divide – namely ‘who has access to the internet and who does not’ – to rather focus on the differences between online users. She terms this shift second-level digital divide (2008). The focus of this second-level digital divide – also commonly referred to as called digital inequalities studies (DiMaggio and Hargittai, 2001) – is on the understanding of the social and structural variations in skills for persons with formal access to the internet (DiMaggio and Hargittai, 2001; Hargittai, 2008). In other words, theorists of the second level divide perceive inequalities related to the digital as being a matter of (un)equal skills and differential patterns of usage.

Van Dijk’s model (2005, 2011, 2019) theorizes the concept of access as the succession of four steps: 1) motivation; 2) physical and material access; 3) digital skills and 4) usage.

Yet, for each of these dimensions, having access to technology is subordinated to the provision and mastery of physical (technical apparatus). Indeed, within this model 1) motivation or motivational access is defined as the ‘wish to have a computer and to be connected to the internet’ (van Dijk, 2011: 62). This first type of access is deemed essential to digital engagement insofar as the lack of motivation or positive attitudes toward technology increases the likelihood of being a low user (van Dijk, 2011, Helsper and Reisdorf #REF Reisdorf and Groselj 2017). Once motivation to access a computer or internet is no longer a barrier, 2) physical and material access, that is to say the physical provision of technical artefact – computer, laptop, etc.– can be reached. 3) Skills access or digital constitutes the third step of the sequential model. Van Dijk (2005) distinguishes between content-related skills (information, communication, content-creation and strategic skills) and medium-related skills (operational and formal skills), while van Deursen and van Dijk (2011) refine the classification further to add variables such as age, education and internet experiences in the measurement of digital skills. However, while the classification remain unevaluable for research on digital inequalities, such gradation tends put an emphasis on having access as a purely cognitive process (Wilson, 2000) throughout which users develop relevant (technical) knowledge about the functioning of (hard)software and networks. The final step of the model is 4) usage measured through the time spent online and the number and diversity of applications used (online gaming, chats and social networks, etc.).

As such, understanding inequalities related to the digital moved from differentiating who is in and who is out, to defining inequality by distinguishing who, among those online, have the capacities (and the resources) to develop the technical knowledge required to ‘exploit the internet’s potential and avoid frustration’ (Hargittai, 2002). Hence, having access to technology remained, even within this second-level digital divide, heavily focused on the provision and mastery of physical equipment.
1.1.28. 6.1.3 The third level digital divide: inequality in outcomes

The third level digital divide puts an emphasis on the offline benfices that people are able to gain from their access to internet. Helsper, van Deursen and Eynon (2015) define this third level as the ‘gaps in individual’s capacity to translate their internet access and use into favourable offline outcomes’ (2015:30).

While the traditional model of access (van Dijk, 2005) gave little indication as to what happens once internet users are offline, the outcomes-based framework of digital inequalities is concerned with understanding how traditional indicators – motivation, access, use and skills – are translated into offline outcomes. Drawing on Bourdieu’s (1986) theorization of traditional inequalities in forms of capitals and on van Dijk’s access model(2005), Helsper, van Deursen and Eynon (2015) distinguish 4 sorts of outcomes:

- Economic: outcomes in the economic field relate for example to poverty or joblessness and can translate into someone finding a job online because having immediate access to wider opportunities.
- Cultural: outcomes in the cultural field are connected to ideas of socialization or acculturation; they encompass education, entertainment or art.
- Social: social outcomes relates to attachment to networks, giving one access to knowledge and support.
- Personal: personal outcomes relate to mental or physical well-being and/or attitudes and refer to the abilities of individuals to take advantages of opportunities regardless of their economic, social or cultural backgrounds
- Although having access to technology is not the prime concern of this model, – in comparison with the first and second level divide – it remains nonetheless based on a classificatory framework putting a strong emphasis on the acquisition of physical apparatus.

Albeit the conception of and focus on digital inequalities research has certainly evolved over the years, the issue of access has remained relatively static, having access to technology being overall understood as having access to a material (physical) equipment – computer, smartphone, etc. As such, it is implicitly assumed that access to technology is defined either by the ownership of a specific equipment or that having access consists primarily in the acquisition of the relevant competencies for the use of this specific equipment.

Yet, this view of the concept of access is problematic insofar as the concept of access remains predominantly ‘equipment-centered, that is to say focused on the provision of physical artefact: ‘access is not a single decision to purchase a particular technology but a continuing process of getting access to new versions of hardware and software, peripheral equipment and subscriptions’ (Van Dijk, 2017:2).

While we agree with the fact that access is a continuing process, our research shows that it is not only about getting access to “new versions of hardware and software, peripheral equipment and subscriptions”; within a polymedia environment access becomes gradually more about the possibility of accessing various services regardless of the hardware or the software, or any other peripheral equipment for particular goals. This is of course not to say that such equipment are meaningless; rather, they are secondary in importance when it comes to digital engagement. Technological advances have profoundly transformed the way that people use and access technology; yet, it is our belief that the current conceptualizations of and theories on access do not sufficiently recognize how the uses and adoptions of digital technologies go beyond mere hardware or software, but are highly influenced by individual’s everyday social arrangement. Henceforth, the following
section reviews the concept of polymedia (Madianou and Miller, 2013) and uses it to describe the current shift in access – from equipment to services.

### 6.2 Rethinking access: from equipment to services

As demonstrated in the previous section, digital tools allow individuals to maintain significant involvement in their familial and social networks despite the distance; they equally provide the possibilities keep in touched with loved ones when physical interaction is not possible. Hence, the geometries of the intimate (section 5) show the increasing role played by digital technologies in interpersonal communication.

To answer their communication needs, we observed in our research how individuals combine and express themselves through a varied range of media. Whereas limited to one or two media – generally the landline telephone or the desktop – the communication opportunities afforded by the development of technology enabled our participants to access dozens of different platforms and services to achieve their purposes. According to Miller and Madianou (2012), this proliferation of communication opportunities engendered what they term ‘polymedia’ or the ‘profound transformation in the usage of increasingly converging communication technologies’ (2013:2). Polymedia describes this emerging environment of unrestricted access to a multiplicity of interconnected media which no longer exist independently from each other but evolve in synergy with one another (Jansson, 2015): “few individuals confine themselves to a single medium; most operate a repertoire of alternative media which in turn may relate to different people, different kinds of messages but also these issues of emotional control and expression. For each individual, polymedia represents a kind of their personal repertoire of communication media and emotional registers (Madianou and Miller, 2013:17).

As such, the focus is less on the affordances provided by each particular medium, and more on how individuals use these contrasts between media in order to meet their needs. In a polymedia environment the focus of users gradually shifts from attention to the particular qualities of a technology (e.g. cost) to an emphasis on the existing range of possibilities available to fulfil their social and emotional demands. In order words, deciding between texting, Facebook wall-message or posting Snapchat videos is not only determined by the technological affordances of a particular medium, but is more about making a choices as to how best to communicate a specific message. This in turn implies that, depending on the message or the communicative need, users will quickly switch through and between different media that best convey their messages – making traditional material and physical constraints – having a phone versus having a computer - less important in shaping their choices. This certainly does not means that material costs are absent from the issue of access (van Deursen and van Dijk, 2019), nor does it means that physical access has become obsolete; rather, using the concept of polymedia demonstrates how people create fluid and mobile media practices regardless of the equipment used.
“...I have a tablet, a telephone and a laptop and each of them has a specific use. The laptop is going to be the most versatile and comfortable tool to use because the screen is bigger and the storage capacity of the hardware is bigger. Also I can save documents on it and it is more performant than the other two. I can also watch movies on it because the screen is big enough (...). My tablet is to travel mostly. To be able to check itineraries or restaurants when I’m abroad. (...). And my smartphone is purely a communication tool. I only use it for calls and SMS, for interpersonal relations with WhatsApp where I am in a lot of group chats or I communicate with more than one person at the same time. (...). For me these are distinct objects and I use them very differently, depending on what I do or what I want to do.”

(Male, French speaking, 1st life category {18-30 y.o.}, high education, in couple, employed, no children)

“I usually use my laptop when I am at work, that is during work hours, even when I am working from home. Sometimes when I go to Germany to visit my husband I take it with me. But my laptop is pure work. (...). My iPhone for example I use a lot on the train because I find it more discreet and easier to manage when I’m on the road. And my iPad I use mostly at home or when we go on vacation, to read or watch movies.”

(Female, Dutch speaking, 3rd life category {51-70 y.o.}, high education, in couple, employed, children no longer living at home)

These quotes illustrate perfectly the idea expressed by the concept of polymedia (Madianou and Miller, 2008). We see how individuals, depending on the needs, will use and/or combine various platforms and services to achieve their purposes. These accounts also reveal that individuals are less and less tied to specific infrastructures, whether these are particular devices such as smartphones or limitations such as Wi-Fi reception; ultimately, access is experienced or performed through the ‘omni presence’ of services, that is to say the multiple channels through which a service can be used and reached (via smartphone, laptop, through or without Wi-Fi connection...) to achieve specific needs. The term ‘omni’, meaning ‘every’ or ‘all’, suggests the integration of multiple media and the creation complex matrices of possible ways to achieve the desired outcome. Within a polymedia environment, the ‘omni presence’ of services ultimately implies that boundaries between equipment and services cease to exist giving thus way to a brand new approach to the notion of being online.

This observation leads us to argue that having access is no longer a matter of being connected. Rather, it implies the ability for each individual to achieve their specific purposes. Access ceases to be solely about the platform (computer, tablet, website...) but shifts towards accessing the services needed to fulfill specific aims and affordances. Whether access is obtained via a fixed home computer, a laptop, or a smartphone is of lesser importance; access to services is primordial, whereas access to infrastructures has become secondary.

The analogy of the Netflix strategy can be used to illustrate this argument. As mentioned in the previous section (4.2.3), a lot of the leisurely usages of digital media revolve around Netflix. The original business model of the company which included DVD sales and rental via mail quickly evolved to become the top-media services provider worldwide. Backed by this success, Netflix made the ambitious wager of being a service that would serve all platforms, from TV to smartphone and tablet, wager that the company is more than likely to win, if this is not already the case. At the heart of this fame is the motto of Netflix itself: ‘Watch TV shows and
movies, anytime, anywhere. The company has astutely developed a service offering that renders the platform of execution secondary in importance. With one service, users can actually decide, across the variety of platforms available, which equipment is best suited to answer their specific needs or wants. Put differently, people do not want a computer or a smartphone per se, but more important we notice that it is the possibility of accessing a service from any potential device that motivates digital engagement, ‘anytime, everywhere’. This conclusion is of fundamental importance for both policy makers, researchers and field organisations involved in the development of digital skills and inclusion for three main reasons:

- Motivation to access or use technology is not primarily spurred by positive or negative attitudes (van Dijk, 2005); we contend that motivational access is grounded in the needs of individuals;
- The needs at the core of the motivation to access technology should be put at the forefront of the digital agenda;
- As access shifts from platform to services, we introduce the concept of digital fluidity as metaskill necessary for the development digital autonomy.

6.3 Implications of the shift in access

6.3.1 Motivational access: attitudes versus needs

The shift in access, from equipment to services and the focus on the geometries of the intimate (section 5) reveal that motivation is not solely spurred by attitudes, whether positive or negative, but is contingent to individuals’ needs. According to van Dijk’s motivational access theory (2005), (non) uses and (dis) engagement are determined by attitudes towards digital media: the more positive the attitude of users, the more likely they are to engage with digital technologies (Reisdorf and Groselj, 2017). While we agree with the premise according to which without motivational access – that is to say without actual incentives, there will be no physical access (van Deursen and van Dijk, 2015) – we argue against the idea that this motivation or incentive to use digital technologies is solely shaped by positive or negative attitudes towards digital technologies. We contend that it is the needs – and more importantly the extent to which these needs can be answered and not the attitudes – that shape motivational access and predict subsequent engagement. In other words, individuals will be motivated if they have the feeling that their needs are met, whether it be the need to find a job or the need to watch a movie in high definition without having to pay for it. This observation is shown in our research by the importance for our respondents of maintaining social contact through time and space, and the need for respondents to have certain public and private services delivered, being it online or offline.

The respondent below recently lost his job after a severe injury. At 49 years old, he is obliged to find a new career path less physical than his previous, such as a desk job; yet this means having to learn how to use digital technologies. He reveals during the interview that he had been very apprehensive at the idea of learning to use digital technologies because he had grown accustomed to distrusting new digital tools.

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18 https://www.netflix.com/be-en/#this-is-netflix
However, despite his negative attitude towards technology, his need to find a job took precedence over his reserve.

“I was 49 and I had worked quite a lot in my life but I realized that if I ever wanted to be able to work in the administration like I wanted I had to master digital tools. So I decided to go on and follow some computer lessons”

(Male, French speaking, 3rd life category {51-70 y.o}; low education, living alone, unemployed, no children)

For other participants, the possibility to keep in touch with their loved one, and consequently the possibility to answer their need to communicate was a strong motivation. The respondent below recalls her first use of Skype. Her daughter had recently moved abroad for her studies and she and her husband wanted to be able to keep in touch with her. So they both a computer and had Skype installed on it so that they could keep being in touch with their daughter.

“So for me, my trigger was when our Martine moved to the US. So she left to live on the other side of the globe (laughs), well at the time this is how it felt (laughs), and so yes, we had to have a computer at home to stay in contact because I had already one at work, but it was just for work, it had nothing to do with home but when she left my husband and I said to each other ‘well we need to do something her so we can send her pictures from us and she can send us pictures from all the places she is visiting’. I mean, this was a long time ago he, for me even more because my daughter was born in 71. At that time, the computer was not what it is now, and it was also not easy for us, but yeah...

(Female, Dutch speaking, 3rd life category {51-70 y.o}; middle education, in couple, retired, children no longer living at home)

Henceforth, we see that motivation to use digital technologies does not appear out of thin air, nor can it be solely attributed to attitudes or perceptions, but it has to be connected to the wants of individuals and in order to cultivate the motivation of individuals it is important that we understand their needs.

6.3.2 Putting the needs first

This argument brings us to the second conclusion elicited by the shift in access, from equipment to services namely the necessity to put the needs of citizens at the forefront of the digital agenda. Most of the time, when trying to explain why some people are less likely to engage fully with digital technologies, individual characteristics such as age or income are taken as start and end point of the analysis (Helsper, 2017). This approach a) assumes that these stable characteristics are what drives the adoption of digital technologies and b) forsakes the processes of the everyday life, such as demonstrates in section 5 on the importance of the intimate. To be clear, it is not to say that socio-economics characteristics do not play a role in digital engagement; as it has been demonstrated in section 4, indicators such as education or age still influence to a certain extent processes of inclusion. Nevertheless, we contend that these macro-structural constraints
should not be the only focal point of interventions. Digital divide research and digital inclusion policies should pay a renewed attention to the social environment of users as having a tremendous impact in the development of digital autonomy and empowerment.

Disengagement of the fact of not using technologies is not always due to economic factors. It often results from the inability of users to see or find answers to their needs. Instead of penalizing them for being disinterested (4.2.2), the question that should be asked is: Have their needs been met? For an individual who wishes to communicate with a friend abroad, presenting him with Word 2003 is not likely to spark interest, especially when the digital is already associated with bad experiences: “society constructs an image of ICTs based on the benefits they bring to certain groups which does not relate to the everyday needs and lives of those who are digitally excluded. Therefore, digital inclusion becomes something they have no reason to want or expect, and no ability to achieve” (Helsper, 2017: 231). Rather than putting an emphasis on what people ought to desire from technologies, or do during their time spent online, there should be a move towards understanding what drives individuals, what they need – to communicate, to find a job, to create an online business – an incorporate these realities in the overall vision regarding the setting of digital inclusion policies.

6.3.3 Digital fluidity as metaskill

The third conclusion brought by his shift from equipment to services is on the necessity to develop trainings beyond the mere tools, platforms and obvious functionalities. Since access is increasingly focused on services and personal needs, the development of digital skills should not revolve solely around learning how to use Microsoft 2008; instead, it should also focus on teaching people how to use specific services on a variety of equipment. What is often noticed in computer classes is that as soon as a training is over, people again need to be trained because the interface of a specific platform or tool changed. These individuals are unable to intuitively use such digital tools once an update has been made. Henceforth, it is essential to train individuals to use services across wide array of equipment instead of privileging an equipment-oriented training, that is to say learning to use one service on one type of equipment. It is crucial to center the development of digital skills on building up a fluidity of use across platforms and equipment.

We thus introduce the concept of digital fluidity as a metaskill for autonomous use. Whereas a skill is the ability to do something, a meta skill is essentially a higher order of skills that enables other skills to happen. Put differently, a metaskill represents the ground on which other skills can take form and is highly reflexive insofar as it can be applied from one skill to another. As access moves from platforms to services, there is a growing need for individuals to develop new sets of skills that will allow them to adapt to an ever-changing technological environment. The current digital age and the blooming data age are introducing more and more complexity in the day-to-day lives of individuals, from massive data coming from sensing technologies to the diverse literacies required by different services.

We define digital fluidity is defined as the ability to move easily between platforms and services. It refers to these repertoires of skills and the rapidity of execution that goes beyond the mere ability to express oneself and includes the capacity to apply learned skills over a multiplicity of platforms and services. Digital fluidity is technology made intuitive as people develop repertoires of practices that they are able to transpose to every platforms or services that they encounter. As such, we contend that by allowing individuals to develop an intuitive understanding of the technologies they encounter, digital fluidity helps people deal with the abstractness and the non-perceivable properties of the digital. Digital fluidity should not be confused with
computer literacy which is commonly associated with mastering a specific equipment. Digital fluidity speaks of the dynamism of the learning process within a constantly evolving technological environment and refers to this easiness of flow, in and out of services, platforms and tools, that allow people to cumulate and aggregate knowledge and sophisticated sets of skills that they can in turn transfer to other media or services.

We conceptualize digital fluidity as a as a synergic set of the following skills:

- **Skills related to structure**: these skills can be compared to the operational skills of Van Dijk’s classification (2005). They relate to the understanding of the broader architecture of the platform on which the service is being operated. They entail the ability to create, construct and produce content. At the level of structure, we find additional skills such as problem-solving skills. Understanding the architecture allows individuals to be more proactive in finding solutions when experiencing a problem with digital media: browsing online for a tutorial, asking specific help to someone within the social network, ...

- **Skills related to the functioning**: these skills can be compared to the informational skills of Van Dijk’s classification (2005) and refer to the differences in functioning, appearances, interfaces of a service/platform depending on the service/platform used. They entail the understanding that content and the related skills associated to benefit from this content, will differ according to the service/platform used. In understanding the differential functioning of technology, individuals acquire critical skills in selecting the technology and the type of information most appropriate to achieve specific needs.

- **Skills related to the etiquette of use or Netiquette (soft skills)**: understanding the civility, norms and shared values that people have when it comes to communicating online. These skills entail in a broad way all forms of communication skills related to the construction, understanding and conveying of messages, the skills to interact and participate in online communities and the skills to manage sensitive content and privacy online.

- **Skills related to knowledge integration**: These skills come close to what Van Dijk calls strategic skills (2005) and consist in applying the understanding of the structure, the functioning and the social codes to general use of service. Skills related to knowledge integration are always oriented towards achieving specific goals or outcomes.
Figure 20: Conceptualizing digital fluidity
SECTION 7: DATA LITERACY – THE NEW GOLD?
7. Becoming literate in the data age

Everyday objects – from smartphones to home appliances – become increasingly equipped with sensing, sensing or sorting technologies that allow these objects not only to understand their environment but endow them with the capacity to identify and precisely recognize the individuals that make use of them (van Deursen and Mossberger, 2018). This implies that as individuals incorporate these objects in their daily routines, more and more data about them is being collected, stored, used and sold to third parties, possibly without their accord. Moreover, when permission is asked for the collection of data, it is often done is such an impenetrable language that users, most of the time, neither read nor understand what they are expected to agree upon. One of the most cited concerns, especially with the highly educated participants (4.2.3), refers to issues related to privacy, data collection, data gathering. As personal data are aggregated from various technologies and equipment, people no longer feel that they are in control of their information, or that they have the possibility to determine what can be known and revealed about their personal lives. As data starts to mediate the everyday life, it is clear that data literacy is of fundamental importance for processes of empowerment, digital autonomy and participation in a democratic society.

The concept of literacy and the skills associated to it are not static by nature but produced and defined by the social practices and technological changes occurring at a certain period of time. As new technologies appear, new literacies and skills are needed to take advantage of the rapid technological changes. For instance, we observed throughout the 85 interviews that many graduates between 30 and 40 years old finished their studies having encountered the literacies elicited by a wide array of new technologies: web editors, presentation software, instant messaging, virtual worlds, social media, etcetera. As students, they experienced new literacies at the end of their schooling that were completely unimaginable at the beginning. Given the increasing pace of technologies, it is likely that students who will engage in higher studies in the coming years will experience even more changes during their own literacy journeys.

As such, the rise of the Web 3.0 and the shift in access from platforms to services has heightened the needs for data literacy. The term data literacy is often associated with the statistical world and pictured as relating exclusively to computational scientists. Over the last decades, several definitions of data literacy have been explored yet without ever leading to a common ground. In this section, 1) we review these definitions; 2) we explore our participants’ perceptions of the datafied society. We show that, although the use of data by third parties is negatively perceived across all age and education categories, not only those with strong social networks seem to be able to ‘thwart the system’ by choosing self-exclusion from certain digital services as coping mechanism to protect their privacy. This ability to exclude oneself from certain digital services deemed as a threat for civil liberties a) highlights the growing unbalances and inequalities created by the new data age, and b) calls into question the efficacy of the skills promoted by current definitions of data literacy.
7.1. Data literacy: an overview of the current conceptualizations

Data literacy as a concept and as a topic of discussion is a relative novelty, in comparison with other more established forms of literacy such as media or computer literacy (Van Audenhove et al., 2018). Nevertheless, despite its newness, the concept of data literacy has been defined and rethought by several authors, yet without to this date arriving to a conclusive definition. Due to the convoluted nature of data themselves, - open, personal or big- existing conceptualisations of data literacy constitute a complex field of entangled definitions. Nevertheless, out of this intricacy we were able, through an extended literature review, to delineate five main conceptualisations of data literacy: 1) data literacy for consumption; 2) data literacy for decision-making; 3) data literacy for communication; 4) data literacy for creation; 5) data literacy for and through ethical use (Matthews, 2016). It is important to note that these five conceptualizations are not mutually exclusive; rather the skills advocated within each conceptualizations easily overlap, shaping our understanding of what it means to be data literate. Yet for the sake of argumentation, we delineated each approach separately to highlight their unique view on data literacy.

1.1.29. Data literacy for consumption

This conceptualisation of data literacy puts the emphasis on the ability to consume data, that is to say to ingest and digest information presented in the form of digital data. Within such definitions, data literacy is knowledge: the knowledge of what data are, how they are shared and visualized, is of critical importance for data literate citizens. For citizens to effectively consume data, they need to be able to translate this knowledge of what data are in their daily activities: “Data literacy is knowledge of what data are, how they are collected, analysed, visualised, and shared, and is the understanding of how data are applied for benefit or detriment, within the cultural context of security and privacy” (Crusoe, 2016: 38). Data literacy for consumption stresses amongst other competencies such as understanding, reading, or using data.

A) Reading data involves being able to discern what data are, and what aspect of the world these data represent (Bhargava and D’Ignazio, 2015); B) understanding data refers to individuals’ awareness of the role of data in society as well as the implications of their use (Prado & Marzal, 2013). C) Using data, on the other side implies the ability to retrieve and re-use data knowledge in specific contexts (Frank et al, 2016:5). Writing specifically from an educational perspective, for Vahey et al. (2006) using data further entails being able to select appropriate tools to transform raw values into meaningful information. In this context, data literacy is strongly associated to mathematical and numerical skills: “we expect that by engaging in the formal learning activity in mathematics, students will develop not only a deep understanding of the relevant data literacy techniques, but also develop a stronger capacity to transfer their understanding to other situations” (Vahey & Al 2006:3). McAuley et al. (2012) also focus on data literacy primarily as the ability to consume information by defining the concept as the “ability to identify, retrieve, evaluate and use information to both ask and answer meaningful questions” (2012:53). Distancing themselves from sole computational skills, they highlight the capacity of data literate citizens to critically filter and evaluate information in order to support their decision-making processes.
1.1.30. Data literacy for decision-making

Seeking to go further than a sole focus on consumption, some authors have added the idea that data literacy is essential to make informed decisions. In a world saturated by information, users need to be able to critically assess and judge what information is relevant, what and how digital data can be used to make decisions about one’s life. Data literacy for decision-making refers thus to what is commonly known as evidence-based thinking (Vahey et al., 2012), that is the use of data as source of evidence to support an argument or a decision: “Instead, the goal is that through analysing whether arguments are factual, use relevant data, and have conclusions that are supported by evidence, students will come to recognize that arguments which have an intuitive appeal may not be the strongest quantitative arguments. We posit that this recognition is critical to becoming a data literate citizen” (Vahey et al., 2012:183). Within this framework, numbers do speak for themselves. Data and the quantifiable knowledge they represent appear as an objective and scientific description of the world, void the subjectivity characterizing social interactions (Boyd & Crawford, 2012). Henceforth, being data literate speaks of the ability to analyse data, to filter, sort, aggregate and analytically assess the validity of data. While Deahl (2014) defines data literacy as the “ability to understand, find, collect, interpret, visualise, and support arguments using quantitative and qualitative data” (2014:41), Wolff et al. (2016) identify as key competencies of data literate citizens the capacity to ask and answer questions from data. In this approach, data become the evidence citizens can (and should) trust to “make critical judgement on the reliability of the information presented and (...) better understand how their own contributed data is being utilized and make more informed decisions when deciding what data to make available” (Wolff & Al, 2016: 16).

1.1.31. Data literacy for communication

Beyond the critical use of data for informed decision-making, some authors have conceptualised data literacy as the ability to communicate and represent data. This approach emphasizes visualizing data sets as core competency for a data literate citizenry: “data visualisations involve taking pieces of information and rendering it into visual formats, involving the mapping of this information onto a property such as shape, colour, size, and position and arranging these properties in space so that they have a relationship to each other that is designed to convey the meaning of the information” (Lupton, 2017:1604). This approach invites individuals to go further than the critical assessing of digital information, to instead tell a story with data by means of visuals (Crusoe, 2016); in other words, data literacy for communication is about the creative extension of data knowledge to share stories and experiences with the world, handle and solve challenges: “data literacy (...) include the abilities to select, clean, visualise, critique and interpret data, as well as to communicate stories from data and to use data as part of a design process “ (Wolf & al. 2016:23).

1.1.32. Data literacy for and through ethics

Within this framework, data literacy is perceived as both a tool to bridge the ethical dilemmas posed by the data-driven society, as well as a means of using data in a responsible manner. As society and governments become increasingly reliant on data for their functioning, concerns about privacy, civil liberties and exclusion have arisen within the literature, with authors warning about the threats posed by the new data ecosystem: “(...) big data threatens more than just privacy. It could also jeopardize political and social equality by relegating vulnerable people to an inferior status” (Lerman, 2013:60). As these threats become more pronounced in an age of mass surveillance (Zuboff, 2015) and algorithmic vulnerability (Thornhan, 2019),
data literacy definitions progressively add the ethical use of data in their sets of competencies (Wolff & al., 2016; Bhargava & al., 2015; Mandinach & al., 2015). Referring specifically to the use of data in an educational context, Mandinach & al. (2015) defines the ethical use of data as “part of knowing how to use data, and that knowledge focuses on how to protect student privacy and maintain confidentiality of student data. (…). Responsible data use also includes knowing when and when not to discuss a student’s performance in public (2015:6).

7.2. Data literacy from an empirical perspective

Looking specifically at the digitalization of public and private services, our research shows that one of the main concern of respondents when it comes to data refers to privacy, and more broadly the uses of their data by third parties. Our findings show that, across all ages and socio-demographics categories, one of the attitudes that came the most to the fore during the in-depth interviews was that of mistrust regarding 1) what and how data are collected and 2) who collects the data. However, our findings also shows that, while our respondents were equal in the face of fear, strong inequalities were noticeable in the ways in which individuals were coping with these fears. To make sense of this complexity, and in order to provide a contextual reading on data literacy grounded in empirical research we first highlight how experiences with, and concerns about data intersect across the three life groups. For this purpose, we present two of the main life domains where these attitudes of mistrust were the most visible: the commercial life domain and the institutional life domain. Second, we show how, out of these intersecting concerns, growing inequalities in the ways that individuals manage their exposures in the data society are on the verge of complexifying the picture.

1.1.33. Equality in the face of fear

The commercial life domain

The commercial life domain refers to the data used and/or collected for commercial purposes. This level speaks of the use of personal data by commercial firms for targeted advertising, or to track consumption habits, what can be broadly subsumed under the term ‘consumer profiling’ (Eldering, 2006, Varela & Ares, 2014). Most of our respondents are aware of the fact that their actions – online or offline- such as purchasing groceries with a credit card, acquiring a shopper card, subscribing to newsletter, etc. are being traced and stored in digital databases. It is also clear for most of our respondents – age, education and gender taken into account- that the digital trails they leave behind are being used by corporations, either to elicit more consumption or to be sold to third parties for the economic gains.
“What also bothers, especially when I’m on my phone is that fact that you always get those notifications and stuff. (....). Do you know for example that if you are shopping online on your laptop, you will get advertisings on Facebook about what you were shopping earlier the same day? When I see that I just think ‘Uggh creepy’; that’s the whole ‘Big Brother is watching you’. And then I’m thinking how hard is our privacy really protected?”

(Female, Dutch speaking, 1st Life Category {18-30 y.o.}, high education, in couple, employed, no children)

“Basically now everything is on the web. I have someone in my family who is an IT geek and who also says the same, that you have to be very careful with all that. And I am very scared of that because I think that nobody is really looking into what is happening with our data. Also with companies and so having your data (long pause) I find it disturbing because of what they can find out about you... it is like they were stalking you”.

(Female, French speaking, 1st Life Category {18-30 y.o.}, low education, single, employed, no children)

In the commercial context, the concerns of our participants are not so much centered on the agent collecting the information, as it is about the nature of the information being collected (age, sex, family situation, consumption habits); in other words, what type of data are being collected are of more importance than who is collecting the data (Nissembaum, 2004). For a lot of respondents, living in the datafied society means being constantly requested – if not coerced- to give in their data. This constant tracking also implies that their right to anonymity (Nissembaum, 1998) is progressively being erased. This emphasis on the desire to be anonymous was significantly more present within respondents from the 1st life category (18-30 years old) with stable employment. The necessity to preserve anonymity was strongly linked to the growing inability to keep their networks separate, especially on social media. As a result, interactions on platforms such as Facebook were perceived as intrusive because the boundaries delineating their social environments were becoming increasingly porous.

“For instance I post fewer things on Facebook now because before I had a rule: no colleagues as Facebook friends, but then they started adding me on Facebook and it was really a difficult dilemma: I honestly did not want to add any of them on Facebook but then it is tricky because you are eventually going to see them at work the next day, how are you going to explain why you did not add them? So now I occasionally like one post or picture just like that but I won’t for instance share my holidays pictures publicly”.

(Male, Dutch speaking, 1st Life Category {18-30 y.o.}, high education, in couple, employed, no children)
For Martha Nissembaum (1998), anonymity matters because it allows people to be unreachable: “When we think of protecting anonymity, we must think about this broader range of possibilities; we must think not only of how a person can prevent his or her name from being divulged, but how a person can prevent all the crucial bits of information from being divulged, especially the bits of information that when divulged would enable access to him or her”. (1998:143) . According to her, the capacity to be unreachable in certain situations is the key to reverse current trends of surveillance and monitoring increasingly observed within our societies. Looking back at current definitions of data literacy, it is worth asking if competencies such as reading, understanding and critically assessing data are enough to constitute a data literate citizenry? Or should definitions of data literacy encompass, as advocated by Van Hoven (2001), more transparency and fairness on the part of business firms and institutions? Put another way, should individual users be solely responsible for their data literacy or should the unequal distribution power be equally addressed in data literacy conceptualizations and in policies aimed at developing these skills?

### The institutional life domain

The institutional life domain refers to the data used and/or collected by institutions or governments’ agencies. This domain encompasses - but is not limited to – healthcare services, financial administrators, etc. which in Belgium are progressively becoming ‘digital by default’ (Mariën, Heyman, Salemink & Van Audenhove, 2016). This digitization, often undertaken from a top-down approach, is not only imposed on users (Mariën & Prodnik, 2014) but these institutions equally become breeding grounds of data generation, collection and use. Worldwide, concerns about state surveillance (Cheney-Lippold, 2017) and algorithmic discrimination (Lerman, 2013) point out to the collection and use of data by governments for purposes not always straightforward. Our findings show that the main concerns of individuals in this context was not so much about the nature of the information collected, as with the commercial level, but rather with the agent of intrusion and the purpose of the intrusion. In other words, what mattered more for respondents in this context was to know who was accessing their data and why were they accessing their data (Nissembaum, 2004).

(talking about filling in her taxes online) So they ask you a bunch of personal questions and they tell you they care about your privacy but I am sorry they don’t. If you have to enter every details about yourself to protect you privacy where is your privacy? They just have to type in my name and they know everything: they know who I am, they know where I live, they know what I am going to buy, where and how I spend my money... If any of those things change they know. I am sure they even know when I go to the restroom (laughs).

(Female, Dutch speaking, 3rd Life Category [31-70 y.o.], middle education, single, retired, children not living at home)

What is interesting in the institutional context is that, when it comes to the use or collection of data, respondents from all socio-demographics expressed strong lack of trust towards governmental agencies. For most of our respondents - age, gender and education- taken into account, the fear of intrusion from an institutional agency was very much linked to a feeling of uncertainty: not having control over the flow of information collected made them fear the potential consequences that such data collection might have for their lives. This distrust regarding what governmental agencies are doing with their data was much more
present with respondents from the 1st life category (18-30 years old) – gender and education levels all taken into account. One of respondents for instance, having recently started a new job in the administration, was increasingly worried that old pictures posted social media might resurface and cost him his employment.

For the respondents of the 2nd life category (31-50 years old) and 3rd life category (51-70 years old), their distrust of the use and collection of data by governmental agencies was expressed through a questioning of the activities of said agencies. Within this category of respondents, we noticed more reflections and critics about how, and if, governmental agencies were really doing their best to protect their privacy and their personal data.

“We are experiencing quite an new phenomenon and not a lot is being done about it. I mean those who are managing your data they are becoming more and more powerful and actually we are completely dependent on them. And sometimes it is the government but it is also not always controlled by the government (...). Suppose that everything that concerns you is written on a file somewhere huh? Now who has access to this? Is it the Belgian government? Or Google? Or Facebook? And why? Someone is going to earn a lot of money with these information. What kind of power will such an organization be able to get over you? That for me is unbelievable.”

(Male, Dutch speaking, 3rd Life Category {51-70 y.o.}, high education, widower, retired, children not living at home)

Against the backdrop of conceptualizations of data literacy as a set of technical skills to be mastered, the institutional level shows that skills such as evaluate, read or present data would certainly be useful but insufficient; rather, an interpretation of data literacy as the ability to balance or limit the power of institutions over citizens’ lives would be more accurate in this context. As public and governmental services become increasingly digitalized, the use of data highlights and exacerbates power imbalances between instances controlling not only the flow of personal information but their acquisition, and the individuals unable to anticipate how their data are being used: how then to expect individuals to make informed decisions when they do not trust their environments?

7.3.2. Inequalities in coping with fear

In the preceding section, we have highlighted two of the major fields of concerns for our respondents. We have shown that, age, gender and education all taken into consideration, digital data and their use were very often met with mistrust. Yet, going deeper into the analysis, we noticed strong differences in the ways in which participants coped with these sentiments. Indeed, our findings reveal that higher educated – and to some extent middle educated – will more easily turn to self-exclusion as a coping mechanism; lower educated, and people living in situations of social precarity- while sharing in the fears of the highly educated, cannot afford to exclude themselves for the datafied society.
A coping mechanism is a set of strategies that individuals adopt to manage or adapt to (in)-external stress. According to Folkman and Lazarus (1984), coping is always initiated in response to goals or values that an individual estimate to have been harmed or threatened. As such, a coping mechanism allows individuals to 1) deal with the problem(s) causing the distress, and 2) regulate emotions in situations of extreme stress. It is important to note that, as stress factors vary from one individual to another, so do coping mechanisms.

Looking across the three life categories, we noticed that, higher – and to some extent middle educated) respondents, in the face of an environment that they perceive as increasingly threatening their civil liberties, developed one specific coping mechanism: self-exclusion. Self-exclusion in this context speaks of individuals consciously deciding or envisioning to stop using certain digital services or applications because said digital services / applications are requiring of them to give in too much of their information to be accessed.

“I am more and more envisioning the moment I will stop using public transport for instance. From the moment that I refuse to have a smartphone to pay for stuffs, from the moment that I refuse to be constantly harassed for my data and if after all of this I still refuse to have a smartphone for instance, I am asking myself from what services I am excluding myself to protect my right to privacy?”

(Male, French speaking, 1st life category {18-30 y.o.}, high education, in couple, employed, no children)

The context behind this quote is the gradual digitalization of public transports. This respondent, well aware that his every moves in the city are tracked and that this data are constantly being used – often whitout his consent - described his experiences with the datafied society as the feeling of constantly having to trade in personal information in order to have access to basic human goods. As a consequence, he was at the time more and more contemplating the possibility of excluding himself from certain services – mobility in this instance – in order to protect his privacy.

“I am more and more disconnecting myself. I am very afraid of what can be done with my data and since there is no form of security system, I am always afraid, for example with my phone that someone will get into my phone so this is why I removed the WIFI at home.”

(Female, French speaking, 3rd life category {51-70 y.o.}, middle education, single, unemployed, no children)

For this respondent, self-exclusion went further than mere envisioning to actual realization. Because of the uncertainty surrounding the treatment of her personal information, she decided to exclude herself from a specific service in order to protect what she esteemed valuable: her privacy.

This desire to exclude oneself, we argue, points to one of the most pernicious unbalances of the data age. Indeed, the ability to even think about disconnecting or restraining oneself from using certain applications or services is limited to those with the social and digital resources to do so. Much more than age or education, our research suggests that strong social networks play a crucial role in the ability of individuals to use self-exclusion as coping mechanism in an increasingly datafied environment. Within our study, some respondents...
– usually higher educated - could afford excluding themselves from specific services because they had the social support and the offline resources necessary to fall back on.

“I started doing this because I wanted to travel at ease and not always have people spying on what I do. So now I use a system of ‘word-to-mouth’ where I ask close friends or ask them to ask their friends where they went on vacation, if it is nice, if there are cheap flights to this destination; and they come back to me and tell me stuffs like ‘Oh yeah contact this person, he organises lots of trips if you’re interested’ and voilà!”

(Male, Dutch speaking, 3rd life category {51-70 y.o.}, middle education, single, retired, children living at home)

This respondent, living with his children at the time of the interview had recently stopped checking for flight tickets online. He had noticed that every time he was looking for travel destination: a) the prices started to increase, and b) he was harassed by commercial messages in his mailbox. Sensing that he was being tracked by commercial companies, he decided to stop using certain travel applications and/ or websites, to resort to his social network. Instead of looking for tickets online, he uses acquaintances and/ or friends within his network to find interesting travel destinations and attractive promotions. Once he has the information he needs, he goes in a travel agency and order his flight.

It is important to note that, while the use of self-exclusion as a coping mechanism was more noticeable within higher educated in this research, we do not exclude the possibility of finding such mechanisms – or other forms of coping mechanisms – among other social classes provided that the individuals dispose of, and know how to put their social network to profit.

For others, the datafied society leaves fewer choices...

While higher educated, and more accurately individuals with rich social networks resort to self-exclusion in the face of an environment they deemed threatening, our findings show that for lower educated, and more importantly for older respondents living with limited social interactions, the datafied society leaves fewer choices.

“I am aware that we need to pay attention to our privacy, and I find it good that overall people seem also more aware of that. But for myself I have no idea how to do so; when you go the supermarket and they give you the client card, how do you say no?”

(Male, Dutch speaking, 3rd life category {51-70 y.o.}, low education, single, retired, no children)

This respondent was met through the contact list of a municipal library. Having never been married, nor in a serious relationship, and having no children, he confided us that he was living a pretty solitary life, with limited contacts with the outside world, if not for the municipal library. As such, despite sharing in the same sentiments regarding the use and commodification of their data by third parties, respondents coming from lower educational levels, and especially those with limited social networks, stand in stark opposition to their...
higher educated counterparts. Within this group, it soon became clear that concerns over privacy do not dictate their choices as to whether or not they will adopt a specific technology or services: they sometimes have no other choice than being online, and this at the risks of exposing themselves to unwanted data collection and commodification.

(talking about municipalities installing cameras in the streets) “In principle there is little you can do about all that. They remain the bosses with all their cameras and satellites that they hang to catch everything there is, so... Of course you can switch it off or not use their services but then it means that you are receiving also much less information and then you have nothing less do with the society”.

(Female, Dutch speaking, 3rd life category (51-70 y.o.), low education, in couple, retired, children not living at home)

For this respondent, being online is strongly linked to being part of society. Hence, the self-exclusion as a coping mechanism is hardly an option, as it would implies for her less participation in society. Put differently, for this respondent adopting certain digital services does not entail a binary choice: yes or no; rather staying online is often expressed – however implicitly- through the language of hope, and even resignation: hope that being online will allow her to continue remaining active member of her society, and resignation at the idea that her right to privacy will be threaten (Gangadharan, 2017).

This observation resonates with what has been discussed amongst other by Lerman (2013) and Gangadharan (2012): big data has the potential to exacerbate existing inequalities – both digital and social- and create new ones. It is progressively restructuring our societies by redefining who counts and who does not (Lerman, 2013; Thornhan, 2019). Far from binarism such as ‘privacy poor versus privacy rich’, (Arora, 2019) our research shows that the datafied society, despite all its potential, creates insidious inequities by producing differentiated forms of living and coping with data. Indeed, it progressively generates immense gaps between those whose lives will be ‘less datafied’ because they have the means to escape such processes, and those who do not have other choices than to become ‘hypervisible datasets’.

However, current definitions of data literacy seem blind to such realities. The strong emphasis on technical skills runs the risks of empowering the empowered, those with already access to basic infrastructures, the basic knowledge and (soft) skills to make data work for specific ends. In addition, the cognitive-centric approach of data literacy definitions has left critical questions unanswered: is data literacy really the answer? And if it is the answer, what is the question? Put differently, should we put such a strong focus on technical skills or should our focus be on a critical engagement with the more structural and controversial power relations of the data age?
8.1. Is the digital society widening the gap?

It is by now undeniable that digital media have become integrated into all spheres of the everyday life. Far from being a revolution, they constitute an evolution of older modes of communication (Jamieson, 2013). However, despite such achievements the digital society still betrays a structural myopia built on the deepening exclusion of certain groups in society. The increasing digitization of services, without a clear digital inclusion strategy, runs the risk of empowering the empowered, while widening the gap both at the social and the digital level. If the existing structural digital inequalities are not dealt with, an increasing number of citizens will no longer be able to fulfill basic needs such as work, housing or education because of digital-first or digital-by-default strategies implemented by private and public service providers.

Certainly, new digitized information is accessible to all on equal basis (e.g. tax forms online, city hall documents…) but the ability to translate that access into beneficial and effective use is not spread evenly. In the absence of efforts to equalize the playing field with respect to enabling opportunities for the use these services, the end result may be increased social divides rather than reduced ones particularly, with respect to the already poor and marginalized.

This observation leads to actually ask: Do people still have the choice to opt out of the digital? How can we ensure an autonomous use of digital media if alternative choices are not offered? The capacity to choose is what makes us autonomous beings. Yet it is not the sole responsibility of the individual; rather, such room for choice must be accommodated by society. Digital autonomy cannot be expected from individuals if they have not been given alternatives suited to their personal digital standards or norms. On the contrary, by ‘forcing’ people toward more digital or rather by giving always less alternatives to the digital, the risk of actually pushing individuals toward self-exclusion is real. As a consequence of feeling coerced, individuals might increasingly opt for complete disengagement from the digital.

This empirical contribution has also made clear that crucial issues of digital inclusion are not just technological issues – that is to say that they should not be viewed solely from the lens of physical access to digital media – but have to apprehended at the social and cultural level. Indeed, issues of inclusion and exclusion are eminently social insofar as they entails a diversity of formal and informal support networks that have a great influenced on the adoption or rejection of digital media. Studying issues of digital in/exclusion equally means looking at cultural components such as the values and expectations that enhance or constraint access and use of digital technologies. It is our belief that digital divide research as well as digital inclusion policies do not pay enough attention to soft skills and de social environment of users as having a tremendous impact on the development of digital autonomy and empowerment. As perfectly captured by one of our participants:

“I often wonder, with all this digital, how are things going to evolve? It is becoming an essential thing is society, a right almost as important as electricity or heating. It is no longer enough to have a connection but you need to have minimal skills to be able to take part in all of it”;

(Male, Dutch speaking, 2nd life category (31-50 y.o.), high education, in couple, employed, children living at home)

Yet, what happens then to our society when access and minimal skills are no longer enough?
8.2. Rethinking the concept of access

The shift in access, from platforms to services, conceptualized through the theoretical lens of polymedia (Madianou and Miller, 2013) highlights the changing dimensions of the concept of access. However, it must be noted that the concept of polymedia, in accounting for the fact that people now use and combine a multiplicity of devices to achieve their needs, does not pay enough attention to those who, from the start, find themselves excluded from the digital, either because of low skills or because of precarious economic conditions. The agency of users, or the ability to choose between different media within a polymedia environment is at the disposal of every individual but not everyone has the same opportunities when it comes to making these kinds of choices. As access shifts from platforms to services within a society increasingly digital by default, our findings suggest a deepening precarity for individuals unable or unwilling to keep up with the digital. This risk of exclusion is not merely limited to exclusion from specific benefits provided by digital media, such as access to e-commerce or e-government, but it ultimately means being left out from societal systems that are increasingly reliant on technologies.

In rethinking access, we wish not only to point out to a renewed understanding of what it means to have access, but equally to expand the scope of digital inequalities scholarship and advocate for a reassessment of digital inclusion initiatives in light of the present technological environment. As access shifts from platforms to services in a polymedia environment, new digitized information becomes accessible to all on an equal basis (online tax forms, administrative documents...) but more than the availability of resources, the ability to translate that access into beneficial outcomes is directly proportional to the already existing resources of those able to take advantage of the integrated structure of affordances provided by recent technological development. As such, the three implications elicited by this shift – (1) motivational access is not only about attitudes; (2) the needs of individuals should be at the forefront of digital agendas; (3) digital fluidity as metaskill for autonomous use – contribute to enlarge the reflection around issues of digital exclusion.

8.3. On a data literacy going further than skills

In their article, Gray et al. (2018) coin the term ‘data infrastructure literacy’ to advocate for an expansion of the concept of data literacy. With this approach, they aim at moving from viewing data solely as resource, to understanding data as a set of relationships between infrastructures, technologies and people. “Through this notion we hope to suggest ways in which literacy initiatives might broaden their aspirations beyond data as an information resource to be effectively utilized, by looking at how data infrastructures materially organize and instantiate relations between people, things, perspectives and technologies. Data infrastructures literacy programs aim not only to equip people with data skills and data science but also to cultivate sensibilities for data sociology, data culture and data politics. (Gray et al., 2018: 1). The objective of this concept is to encourage critical inquiry into how data sets are created, and what are the intentions driving their creation. More importantly, data infrastructure literacy seeks to make the infrastructures governing the data visible in order for the publics to problematize such infrastructures and re-align them with their interests: “We suggest that data infrastructures can be viewed in terms of their alignment and mal-alignment with different kinds of interests, outlooks and concerns (...). Making digital data infrastructures visible and problematizing them is, so we claim, not just possible in situations of breakdown from routine functioning but also in cases of mal-alignment with the concerns of the publics that they assemble (2018:2).
The strength of this concept is that it resolutely goes beyond the mere acquisition of skills, to move towards giving citizens the tools to understand, shape and explore data infrastructures: While many previous conceptions of data literacy focus on the effective utilization of the by-products of these infrastructures as resources for knowing and representing the world, we propose that literacy initiatives should place greater emphasis on developing critical scrutiny, reflexivity, inventiveness and infrastructural imagination with respect to the socio-technical arrangements involved in the making of data. (2018:9). Data literacy infrastructures is ultimately a re-invention process: it speaks of re-imaging data worlds by allowing the publics to play a role in the assemblage and the configuration of these data infrastructures. In addition, making data infrastructures visible is, we contend, the first – and very important step – toward answering the feelings of mistrust expressed by our respondents. As aforementioned, many of our participants have: a) little knowledge of what is being with their data, and b) little understanding of datafication mechanisms. It results from that a perception of the datafied society as obscure and lacking transparency.

Yet, while we resolutely agree with, and encourage such expansion of the concept of data literacy, we argue that data literacy infrastructures should not only seek to make infrastructures visible, but it should also actively pursue to make these infrastructures accountable. Broadly defined, the concept of accountability speaks of controlling those in power to avoid abuse (Kuppens, 2016; Warren, 2014; Ferejohn, 1999). Originating as far back as the 11th century, the concept of accountability has been defined and classify across a variety of contexts. According to Kuppens (2016), the notion of accountability implies first, for citizens’ the right to be informed about the activities of those in power. For this right to be enacted, governments or institutions have the duty to adhere to principles of transparency, that is to say, to make reports and information available to all in a transparent manner. Second, the notion of accountability entails for citizens’ the right to receive an explanation, and for governments and institutions the duty to justify their actions and behaviours.

Adding the concept of accountability to data literacy conceptualizations is important for two main reasons:

- First, it puts less pressure on individuals users by highlighting the duties of digital platforms and infrastructures in the data age: accountability is the responsibility of infrastructures (Tetlock et al., 2013). In other words, the focus on accountability forces data infrastructures to take ‘one step back’ and consider the following question: ‘what would people feel about - or how would they react – to such action(s)?’ (Bovens, Schillemans & Goodin, 2014). It implies for said infrastructures to contrast between what could be done and what should be done (Folger & Cropanzano, 2002). To be clear, advocating for accountable data infrastructures does not mean: a) unregulated intrusions into the inner workings of said infrastructures, or b) restrictions of their (creative) capacities. Rather, it encourages data infrastructures to a) take citizens’ concerns into account while b) rethinking their duties in the datafied society.

- Second, it is key to empowering citizens: holding data infrastructures accountable allows those whose data are being collected and commodified to demand and posit sanctions when harmful mechanisms have been exposed. As asserted by Warren (2014), accountability is a system of distributed empowerment: ‘it requires that those entitled to accountability have the power to hold accountable those who make and execute decisions on their behalf’ (2014:41). Henceforth, accountability works side-by-side with visibility: once aversive infrastructures have been made
visible, data literacy should be the tool allowing publics to make said infrastructures responsible for their actions.

In the absence of concerted efforts to equalize the playing field with respect to access to, and use of data, the ‘digitalization by default’ of publics and private services (Mariën et al. 2016) may result increased social divides rather than reduced ones. Against these new divides, our research shows that being ‘data-aware’ – that is knowing that data are being collected and used by third parties – will no longer be sufficient; rather, a new form of disempowerment is likely to affect larger segments of the population - age, education and socio-economic backgrounds taken into consideration. Hence, we contend together that, data may be the new gold but building a strong data literate citizenry is not a realistic endeavor if the infrastructures sustaining, producing and exploiting such data are not transparent. Using the metaphor of Gray et al. (2018), if data infrastructures are to be read as texts, citizens need to be given the tools to decipher them: we cannot hope for citizens to become literate in the data age if the systems on which these literacies are built remain inaccessible. As such, definitions of data literacy should combine an emphasis on both visibility and accountability. These definitions should not only be limited to understanding, reading or using data; rather conceptualizations of data literacy should also aimed, in a first instance, at providing spaces and tools for citizens to deconstruct and reimagine their relations with data. In a second instance, we advocate for definitions data literacy that openly questions the unequal power relations of the data age and the information asymmetries that ensue. As daily interactions with data become commonplace, being literate in the data age will not only be the competency required the most for the coming years; more importantly, it is likely to become the ultimate requirement for citizens to be able to participate in discussions and decisions made by a society increasingly reliant on data for its functioning.


Crusoe, D. (2016). Data Literacy defined pro populo: To read this article, please provide a little information. *The Journal of Community Informatics, 12*(3).

Deahl, E. (2014). Better the data you know: Developing youth data literacy in schools and informal learning environments. *Available at SSRN 2445621*.


Hargittai, E. (2004). Internet access and use in context. New Media and Society, 6(1), 137-143.


## Annex 1: Codebook

<table>
<thead>
<tr>
<th>THEMES</th>
<th>1&lt;sup&gt;st&lt;/sup&gt; HIERARCHY</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; HIERARCHY</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TRAJECTORY</strong></td>
<td>ALL THE NODES AND THEMES RELATED TO THE INDIVIDUAL LIFE COURSE, IN RELATION OR NOT WITH ICT</td>
<td>Factors that led to use or non-use of ICTs. The triggers are external and objective factors for the individuals and should not be confounded with individual attitudes.</td>
<td></td>
</tr>
<tr>
<td>Triggers</td>
<td>Trigger of use</td>
<td>Individual triggers that led to using technologies in life course</td>
<td></td>
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<tr>
<td></td>
<td>Trigger of non-use</td>
<td>Individual triggers that led to not using technologies in life course</td>
<td></td>
</tr>
<tr>
<td>Life transition</td>
<td>Significant life steps for a large number of individuals characterised by their high probability of occurrence and pre-established sequencing common for most (Lalive d’Epinay, 2005).</td>
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<tr>
<td></td>
<td>Birth</td>
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<td></td>
<td>Death</td>
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<tr>
<td></td>
<td>Leaving the family nest</td>
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<td></td>
<td>Love life</td>
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<td></td>
<td>Retirement</td>
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<td></td>
<td>Studies</td>
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<tr>
<td></td>
<td>Work, employment</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biographic rupture</td>
<td>Singualrities in the life itineraries/moments of discontinuity in the personal trajectory, at geographic, familial, or professional scales (Van de Velde, 2015)</td>
<td></td>
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<tr>
<td></td>
<td>Divorce</td>
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<td></td>
<td>Dropout</td>
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<td>Illness</td>
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<td></td>
<td>Immigration</td>
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<td></td>
<td>Relocation</td>
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<td></td>
<td>Reorientation</td>
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<td></td>
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<tr>
<td></td>
<td>Unemployment</td>
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<td></td>
</tr>
</tbody>
</table>

30 Themes and 1st hierarchy nodes (when they are not followed by a 2<sup>nd</sup> hierarchy node) were instituted as thematic groups but not used as coding tools.
### Conditions of Access and Use

#### Equipment
- Material aspect of access and use of ICTs, including the devices, their age, and general conditions.
  - Computer
  - GSM
  - Smartphone
  - Tablet
  - Other

#### Places of Access
- Places where equipment is used
  - PDS: Public Digital Space (Espace Public Numérique or Openbare computerruimte)
  - Home
  - Office
  - Public spaces
  - Public transportation
  - School

#### Multi-accessibility
- Use of the same services/applications on different devices/places

### Digital Engagement

#### Nodes within this thematic group were intended to specify the characteristics of one’s use and the domains of influence

#### Degree of Choice
- Assertions about injunction to use situations and the personal feelings related to this injunction. Those feelings are not to be confounded with more general social representations about the injunction to use and participate.
- Non-normativity: Non-normative position with respect to the use of ICTs: framework in which the use has not been imposed/has been bypassed/refused
- Normativity: Normative position with respect to the use of ICTs: framework in which the use has been imposed/has been chosen
- Neutral: Uncertain assertions and ambivalent positions about how the injunction to use was applied to the individual

#### Frequency
- Frequency at which ICTs are used according to situations and equipment
  - Daily
  - Never
  - Occasionally
<table>
<thead>
<tr>
<th>Experience of use</th>
<th>Length of use and descriptions of experiences using digital media that led to more or less digital engagement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of use</td>
<td>Type of use of the different applications</td>
</tr>
<tr>
<td></td>
<td>Affective, social Using digital technologies to communicate with others</td>
</tr>
<tr>
<td></td>
<td>Cognitive Using digital technologies for informational purpose</td>
</tr>
<tr>
<td></td>
<td>Leisure, escapist Using digital technologies for hobbies and personal interest. This type of use is not to be confounded with a social use, as escapist use concerns &quot;uses that are achieved by individuals on their own and not in organised, more formal or information organisational structures&quot; (Helpser, Van Deursen, &amp; Eynon, 2016)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
</tr>
<tr>
<td>Uses of the social environment</td>
<td>Influence of the surroundings of users of ICTs on individual uses. Influence of the relationship of the social environment on ICTs' uses.</td>
</tr>
<tr>
<td></td>
<td>Family Relatives</td>
</tr>
<tr>
<td></td>
<td>Friends Only when the bounds between people are explicit</td>
</tr>
<tr>
<td></td>
<td>Peers When interpersonal bounds are not clearly identified</td>
</tr>
<tr>
<td>Type of applications</td>
<td>Type of applications used, according to the context and device</td>
</tr>
<tr>
<td></td>
<td>E-banking</td>
</tr>
<tr>
<td></td>
<td>Email</td>
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<td></td>
<td>Pack MS Office</td>
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<tr>
<td></td>
<td>Social media</td>
</tr>
<tr>
<td></td>
<td>Other apps</td>
</tr>
<tr>
<td>Life domains</td>
<td>Fields of social life to which use of ICTs is related</td>
</tr>
<tr>
<td></td>
<td>Administration Uses of administrative platforms and services related to citizenship</td>
</tr>
<tr>
<td></td>
<td>Economic Uses of platforms and services related to banks, online shopping, bills, etc. and money transactions at large</td>
</tr>
<tr>
<td></td>
<td>Education Uses of platforms and services related to education and training at large</td>
</tr>
<tr>
<td></td>
<td>Health Uses of platforms and services related to health, both caring and organizing (medical appointments, social security, research of symptoms, etc.)</td>
</tr>
<tr>
<td></td>
<td>Hobby Uses of platforms and services related to personal leisure and passion</td>
</tr>
<tr>
<td></td>
<td>Interpersonal relationships Uses of platforms and services related to the organization of the private sphere</td>
</tr>
<tr>
<td></td>
<td>Mobility Uses of platforms and services related to personal mobility</td>
</tr>
<tr>
<td>Social representations</td>
<td>Shared representations, common sense, and beliefs about the social world or the link between society and ICTs.</td>
</tr>
<tr>
<td>------------------------</td>
<td>------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Attitudes</strong></td>
<td>Assertions about the sense given to the relationship with ICTs</td>
</tr>
<tr>
<td>Carefulness</td>
<td></td>
</tr>
<tr>
<td>Disinterest</td>
<td></td>
</tr>
<tr>
<td>Fear</td>
<td></td>
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<tr>
<td>Interest</td>
<td></td>
</tr>
<tr>
<td>Mistrust</td>
<td></td>
</tr>
<tr>
<td>Trust</td>
<td></td>
</tr>
</tbody>
</table>

### OUTCOMES

#### Objective outcomes
- Impact and influence of ICTs that have led to perceptible change in everyday life: weakening/strengthening of social participation in particular domains of social life or objective (dis-)advantages from the use or non-use of ICTs
  - Economic commerce: Impact on the economic capital
  - Economic labour: Impact on professional sphere
  - Educational: Impact on cultural capital
  - Governmental: Impact on citizenship features
  - Health: Impact on individual health
  - Mobility: Impact on individual mobility
  - Social: Impact on social capital

#### Subjective outcomes
- Impact and influence of ICTs on the sense of belonging to society, on experiences and perceptions of inclusion and exclusion, or on the recognition of the individual's place in social relations and his or her sense of social utility
  - Communication: Subjective perceptions of a better/worse connectivity to others
  - Efficiency: Subjective perceptions of improving individual daily life by using ICTs or not
  - Independence: Subjective perceptions of improving individual independence toward others by the means of ICTs
  - Inefficiency: Subjective perceptions of not improving individual daily life by using ICTs or not

### AUTONOMY

Based on the “Digital Competence Framework for Citizens” of the Joint Research Centre of European Commission (Carretero et al., 2017), this theme develops the features of digital autonomy in terms of skills and social support.
<table>
<thead>
<tr>
<th>Degree of digital competences</th>
<th>Declared degree of digital competences and perceptions of it</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>Capacity to use ICTs for simple tasks (with or without help) in the domain covered by the concerned skill and in clearly defined situations</td>
</tr>
<tr>
<td>Intermediary</td>
<td>Capacity to use ICTs by yourself for simple routine tasks or non-routine tasks but clearly defined by the needs</td>
</tr>
<tr>
<td>Advanced</td>
<td>Capacity to guide others for tasks and to use ICTs by yourself, according to personal needs and in complex and unusual situations</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social support</th>
<th>Concrete received support when using technologies, punctual or recurrent. Social support includes various forms of helping, from teaching to the delegation of tasks.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colleagues</td>
<td></td>
</tr>
<tr>
<td>Family, friends</td>
<td></td>
</tr>
<tr>
<td>No social support</td>
<td></td>
</tr>
<tr>
<td>Online support</td>
<td></td>
</tr>
<tr>
<td>Technical assistance</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Support to others</th>
<th>Concrete given support to others about ICTs’ uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friends, family</td>
<td></td>
</tr>
<tr>
<td>No support</td>
<td></td>
</tr>
<tr>
<td>Online support</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Learning process</th>
<th>All the methods used to learn and cope with digital media</th>
</tr>
</thead>
<tbody>
<tr>
<td>Targeted training</td>
<td>Instituted methods</td>
</tr>
<tr>
<td>Trial and errors</td>
<td>Non-instituted methods</td>
</tr>
</tbody>
</table>

### PERCEPTIONS

**INDIVIDUAL PERCEPTIONS OF ONE’S RELATIONSHIP TO TECHNOLOGY, WHETHER IT IS ABOUT USES OR REPRESENTATIONS**

<table>
<thead>
<tr>
<th>Negative perceptions</th>
<th>Neutral or ambivalent position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral perceptions</td>
<td></td>
</tr>
<tr>
<td>Positive perceptions</td>
<td></td>
</tr>
</tbody>
</table>

### PRIVACY

**ASSERTIONS ABOUT PRIVACY CONTROL, SHARED DATA, CONTROL OF IMAGES ON SOCIAL MEDIA, PRIVATE AND PUBLIC LIFE BOUNDARIES, ETC.**