STUDY

Barriers to the wider deployment of person centred technology in services for persons with disabilities

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European Association of Service providers for Persons with Disabilities

This study was supported by the European Association of Service providers for Persons with Disabilities (EASPD) and its Interest Group on Person-Centred Technology. The study was conducted by:

Authors:

Evgeniya Hristova, ASSIST – Assistive Technologies

Maurice Grinberg, ASSIST – Assistive Technologies

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SUMMARY

The aim of this study is to identify what are the main barriers and the potential facilitating factors that would enable the uptake of Person Centred Technology (PCT) in the social care sector.

The study proceeded in two logically related parts – a theoretical analysis of the barriers to PCT based on existing studies; and the design and deployment of a questionnaire aimed at gathering data from professionals in service providers for persons with disabilities as to their perception of the identified barriers.
The theoretical part relies on some of the most important recent reviews and sources of information on the topic, and the questionnaire was developed following the theoretical analysis covering all identified groups of barriers.

Results show that barriers related to training and qualification with respect to PCT seem the most prominent for all Europe. These barriers are related to the lack of courses in the university programs and regular required refresher certification courses on-the-job.

An additional problem is the Knowledge and Skills in using PCT of persons with disabilities and their families which again would require professionals to be able to offer the needed training which needs additional qualification.

The efficient usage of innovative PCT requires overcoming also the Financial, Legislative and Regulatory, and Environmental barriers which can guarantee the successful adoption and usage of the full potential of PCT for persons with disabilities by professionals and end users.

The successful overcoming of the barriers to PCT requires a change in the system of service provision starting from the standards and requirements for the university curricula which should be supported by a system of on-the-job courses that provides updates on new PCT available. This whole process should be integrated and strongly supported by policies at all levels which guarantee the needed financing, resources and environmental changes for PCT to effectively and efficiently meet the needs of persons with disabilities.

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Abbreviations and Definitions

AAC	**Alternative and Augmentative Communication** – a variety of methods of communication that can 'add-on' to speech and are used to get around problems with ordinary speech. AAC includes simple systems such as pictures, gestures and pointing, as well as more complex techniques involving powerful computer technology.
AT	**Assistive Technology** – product or technology-based service or solution that enables people with activity limitations of all ages in their daily lives, work, education and leisure. This definition embraces fields of interest that reflect a wider orientation on disability, technology and inclusion, such as eAccessibility, Ambient Assisted Living, Design for All.
PCT	**Person Centred Technologies** – technology-based solutions that affect directly the quality of life of the service users, whether this is personal equipment for mobility, communication, social connectedness, access to digital environments, and technology for safety, telecare, remote monitoring, either embedded in the environment, installed on fixed or mobile platforms, or wearable. PCT definition encompass specialist and mainstream technologies that can be used to enhance people's independence and safety making them less dependent on carers.
PwD	People with Disabilities
SPPD	Service providers for persons with disabilities

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DELIVERABLE 1

Literature review of potential barriers to the use of PCT

1. CONTENTS

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2. INTRODUCTION

The present deliverable provides a literature review on the barriers to PCT. They are summarized in groups with respect to the parties concerned – PwD, families/carers, professionals, service providers, retailers, commissioners, etc.

Based on this literature review, these barriers will be further analysed in the second deliverable D2 where the most important barriers concerning service providers and adult PwD will be identified, classified, and discussed.

Next, a questionnaire for service providers will be designed covering the identified most important barriers to the uptake and use of PCT. The results from the questionnaire will allow for the weighting and ranking of these barriers according to the service providers. The report will also contain suggestions on how to support the further uptake of PCT by service providers for PwD.

Although the scope of the project is limited to barriers to services for PwD, in this first deliverable all found barriers are given. The plan is to analyse them in D2 focusing on the barriers to their adoption specifically by social service providers. This strategy is chosen with the assumption that some of the barriers, which are related e.g. to PwD or carers, can effectively become barriers also to the service providers.

3. SUMMARY OF THE LITERATURE REVIEW

The literature review is carried out using predominantly (but not limited to) materials available online:

- Books;
- Deliverables and reports from previous and on-going projects;
- Papers published in journals and on-line.

The search was done using Google scholar with key words “PCT barriers”, “AT barriers”, “AAC barriers”, and “ICT AT“. In addition, a “snowball” search strategy was used based on the references in the sources.

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The barriers identified are clustered based on the parties concerned: PwD, families/carers, professionals, service providers, retailers, commissioners, and manufacturers. In the current deliverable they are presented in such groups.

On the other hand, another clustering/grouping of the barriers is also relevant. Three main groups of barriers to the usage of PCT were identified with respect to PCT: lack of access, rejection, and abandonment.

- The **Lack of Access to PCT** includes barriers like unawareness of the existence or of the capabilities, lack of financial capabilities of the end users or funding, infrastructure problems, usability problems, etc.

- The **Rejection** barriers occur when the lack of access is not an issue. They are related to negative attitudes and arguments against the usage of PCT which may be related to lack of awareness of the benefits, lack of appropriate training and qualification, traditional believes, religious reasons, all or nothing attitudes, believes in alternative methods and solutions, etc.

- The **Abandonment** barriers appear when neither rejection nor lack of access are at play, but for some reason PCT technologies after being used are abandoned. This can be related to lack of appropriate training and qualification bad usability of the PCT related products and services, to steep learning curves, to missing usage opportunities, to circumvention and substitution by alternative solutions, inertness and lack of motivation by the end users or the service providers, etc.

A third dimension that is important is related to the type of PCT – telecare, digital participation, wellness, mobility, etc.

As all three dimensions of clustering of the barriers are important, they will be taken into account in the further work on the project.

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4. IDENTIFIED BARRIERS

4.1. Persons with disabilities

Barriers	References	Description
Lack of awareness about the available PCT	(Mavrou et al., 2016); (Bodine, 2012) (Light & McNaughton, 2012)	Users (PwD) or potential users are not aware of the available PCT, their purpose and functional application. They lack information or have only partial information about the available PCT.
Lack of awareness about the current technological advancements in general	(Mavrou et al., 2016); (Hoogerwerf, 2016); (Bodine, 2012)	Mainstream technology is inaccessible for most of the users. They are not motivated to get information on new advancements, being inapplicable for them. The lack of previous experience with any technology makes the usage of high-tech PCT effortful, time-consuming and in many cases frustrating, which occasionally leads to abandonment.
Not motivated to use PCT (especially when users are not involved in the selection process)	(Thompson et al., 2013); (Johnson et al., 2006); (Bodine, 2012); (Najafi, Friday, & Robertson, 2008); (Hoogerwerf, 2016); (Mavrou et al., 2016)	Many PwD are not motivated to use PCT – they have adopted alternative strategies to avoid the use of technology. Some of them are afraid that technology use might reduce human care or contact, which significantly reduces their motivation to use PCT.
Lack of understanding or misunderstanding of the advantages and benefits of using a PCT	(Johnson et al., 2006); (Yoxal & Nath, 2012); (Najafi, Friday, & Robertson, 2008); (Hoogerwerf, 2016)	Lack of understanding of the benefits of using a PCT. Misunderstanding of the opportunities of using a PCT. Technology is perceived as not useful and not responding to actual needs.
Lack of understanding about their own potential	(Najafi, Friday, & Robertson, 2008); (Hoogerwerf, 2016)	Many users lack self-confidence and underestimate their own potential to acquire new skills. In

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		other cases they overestimate their abilities, hence they don't use PCT.
Lack of training that is required in order to use some high-tech PCT	(Thompson et al., 2013); (Johnson et al., 2006); (Bodine, 2012); (Najafi, Friday, & Robertson, 2008); (Hoogerwerf, 2016); (Mavrou et al., 2016)	Some PCT require a lot of competence, knowledge and training. Training is usually short-term and not sufficient.
No opportunities to use the PCT (e.g. in a case of an AAC device, there are no communication partners)	(Johnson et al., 2006); (Johnson et al., 2006); (Najafi, Friday, & Robertson, 2008); (Hoogerwerf, 2016); (Mavrou et al., 2016)	Due to bad infrastructure, users are prevented from using PCT in certain contexts. Due to social isolation, lack of support groups and lack of motivation of caregivers, users are deprived from communication partners.
Not the right PCT chosen for the needs of the user	(Thompson et al., 2013); (Johnson et al., 2006); (Bodine, 2012); (Najafi, Friday, & Robertson, 2008); (Hoogerwerf, 2016); (Mavrou et al., 2016)	Not the right PCT chosen for the needs of the user due to bad evaluation or no evaluation of the needs. Especially when the PwD is not included as an active member of the team during the evaluation process.
Not satisfied with the features of a PCT	(Thompson et al., 2013); (Johnson et al., 2006); (Bodine, 2012); (Light & McNaughton, 2012); (Najafi, Friday, & Robertson, 2008); (Hoogerwerf, 2016)	Users experience dissatisfaction by the available features of a PCT.
Privacy concerns (especially when using electronic PCT)	(Thompson et al., 2013); (Najafi, Friday, & Robertson, 2008); (Hoogerwerf, 2016)	Users perceive usage related risks related to safe Internet use and personal data treatment. They might also experience fear of losing control over technology.
Financial barriers	(Thompson et al., 2013);	Cost of the PCT if it is not funded. Financial costs should include

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	(Yoxal & Nath, 2012); (Enderby et al., 2013); (Najafi, Friday, & Robertson, 2008); (Hoogerwerf, 2016); (Mavrou et al., 2016)	also training, maintenance, repairs, etc.
Long and difficult application process for funded PCT	(Hoogerwerf, 2016)	In some cases, the application process takes a lot of time and effort.
Embarrassment of using a PCT	(Johnson et al., 2006); (Hoogerwerf, 2016); (Mavrou et al., 2016)	Prevalence in social and educational settings in many countries of the medical model of disability leads to discouraging PCT effective use.
Fear of stigmatization when using specialized PCT	(Thompson et al., 2013); (Johnson et al., 2006); (Hoogerwerf, 2016)	Using specialized PCT might symbolize disability and/or disease.
Lack of accessibility of the mainstream technology.	Bühler & Pelka, 2014); Bühler, Dirks, & Nietzio (2016); (Mavrou et al., 2016)	Mainstream technology, e.g. interfaces to internet based services and social networks are not adapted to PwD.

4.2. Professionals and social service providers

Barriers	References	Description
a. Lack of awareness about the available PCT	(Thompson et al., 2013); (Bodine, 2012); (Enderby et al., 2013); (Baxter et al., 2012); (Hoogerwerf, 2016); (Mavrou et al., 2016)	b. Professionals are not informed about the available PCT and their advantages. c.
d. Lack of information about the current technological advancements in general	(Thompson et al., 2013); (Enderby et al., 2013); (Hoogerwerf, 2016)	e. Not informed about the current technological advancements in general.

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f. Lack of understanding or misunderstanding of the advantages and benefits of using a PCT	(Thompson et al., 2013); (Bodine, 2012); (Enderby et al., 2013); (Baxter et al., 2012); (Hoogerwerf, 2016)	g. Professionals are either uninformed or misinformed about PCT applicability for particular client groups.
h. Lack of understanding about the importance of inclusion	(Thompson et al., 2013); (Enderby et al., 2013); (Baxter et al., 2012); (Hoogerwerf, 2016)	i. Have negative attitudes about PwD. Longer time is needed to identify potential users who would benefit from PCT.
j. Lack of understanding about the potential of the user	(Borgestig et al., 2016); (Enderby et al., 2013); (Baxter et al., 2012); (Mavrou et al., 2016)	k. Non-effective assessment methodologies lead to the underestimation or overestimation of user's potential. Lack of knowledge or prejudice about certain disabilities.
l. Not motivated to use PCT	(Bodine, 2012); (Enderby et al., 2013); (Baxter et al., 2012); (Hoogerwerf, 2016)	m. Most professionals stick to traditional methods and they are not motivated to put time and effort in adopting innovations.
n. Additional skills required	(Bush & Scott, 2009); (Borgestig, 2016); (Enderby et al., 2013); (Light & McNaughton, 2012); (Hoogerwerf, 2016)	o. Using PCT requires addition skills.
p. Training required (time, effort)	(Thompson et al., 2013); (Bush & Scott, 2009); (Borgestig, 2016); (Enderby et al., 2013); (Light & McNaughton, 2012); (Hoogerwerf, 2016); (Mavrou et al., 2016)	q. Training in PCT implementation, usage and setup is effortful and time-consuming.
r. Not sufficient training and knowledge about assessment and evaluation	(Thompson et al., 2013); (Johnson et al., 2006);	s. Professionals lack training and experience in the assessment and evaluation process.

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process in choosing a PCT for a specific user	(Bush & Scott, 2009); (Borgestig, 2016); (Enderby et al., 2013); (Light & McNaughton, 2012); (Hoogerwerf, 2016); (Mavrou et al., 2016)	
t. Not sufficient training and knowledge about installation and customization of PCT	(Thompson et al., 2013); (Bush & Scott, 2009); (Bodine, 2012); (Borgestig, 2016); (Enderby et al., 2013); (Light & McNaughton, 2012); (Hoogerwerf, 2016); (Mavrou et al., 2016)	u. Training for installation and customization of PCT is usually short-term and not sufficient for professionals.
v. Not sufficient training and knowledge about using PCT	(Thompson et al., 2013); (Johnson et al., 2006); (Bush & Scott, 2009); (Bodine, 2012); (Borgestig, 2016); (Enderby et al., 2013); (Light & McNaughton, 2012); (Hoogerwerf, 2016) (Mavrou et al., 2016)	w. Training for installation and customization of PCT is not sufficient for professionals. They lack the opportunity to gain experience.
x. Technophobia in speech and language therapists (high-tech PCT)	(Bush & Scott, 2009); (Enderby et al., 2013) (Hoogerwerf, 2016)	y. Speech and language therapists lack openness to innovation and confidence to use and engage with high-tech methodologies, which makes them technophobic. They avoid usage of technology in general.
z. No courses or formal training about PCT during their education	(Bush & Scott, 2009); (Borgestig, 2016); (Enderby et al., 2013); (Light & McNaughton, 2012); (Hoogerwerf, 2016)	aa. The lack of appropriate accredited qualification during formal education.

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bb. Funding problems	(Thompson et al., 2013); (Yoxal & Nath, 2012); (Najafi, Friday, & Robertson, 2008); (Hoogerwerf, 2016)	The cost of PCT, maintenance, repairs, etc. be taken into account
cc. Lack of support from the management of the service providers	(Bush & Scott, 2009); (Borgestig, 2016); (Hoogerwerf, 2016)	dd. The management of the service providers do not provide support. There is no funded access to professional support networks.

4.3. Commissioners

Barriers	References	Description
ee. Lack of awareness about the available PCT	(Thompson et al., 2013); (Bodine, 2012); (Enderby et al., 2013); (Baxter et al., 2012); (Hoogerwerf, 2016)	ff. Professionals are not informed about the available PCT and their advantages. gg.
hh. Lack of information about the current technological advancements in general	(Thompson et al., 2013); (Enderby et al., 2013); (Hoogerwerf, 2016)	ii. Not informed about the current technological advancements in general
jj. Lack of understanding or misunderstanding of the advantages and benefits of using a PCT	(Thompson et al., 2013); (Bodine, 2012); (Enderby et al., 2013); (Baxter et al., 2012); (Hoogerwerf, 2016)	kk. Professionals are either uninformed or misinformed about PCT applicability for particular client groups.
ll. Lack of understanding about the potential of the user	(Borgestig, 2016); (Enderby et al., 2013); (Baxter et al., 2012);	mm. Non-effective assessment methodologies lead to the underestimation or over-estimation of user's potential. Lack of knowledge or prejudice about certain disabilities.
nn. Not sufficient training and knowledge about assessment and evaluation process in choosing a PCT for a specific user.	(Thompson et al., 2013); (Johnson et al., 2006); (Bush & Scott, 2009); (Borgestig, 2016); (Enderby et al., 2013);	oo. Professionals lack training and experience in the assessment and evaluation process.

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	(Light & McNaughton, 2012); (Hoogerwerf, 2016)	
pp. No courses or formal training about PCT during their education	(Bush & Scott, 2009); (Borgestig, 2016); (Enderby et al., 2013); (Light & McNaughton, 2012) (Hoogerwerf, 2016)	qq. The lack of appropriate accredited qualification during formal education.
rr. Political or societal pressure	(Bush & Scott, 2009)	ss. Pressure to achieve savings. Usually when the negative model of PwD is prevalent – only costs for providing PCT are considered, there is no evaluation about the outcomes of PCT for both PwD and the society.

4.4. Families/Carers

Barriers	References	Description
Lack of awareness about the available PCT	(Borgestig, 2016); (Light & McNaughton, 2012); (Baxter et al., 2012)	Families/Carers are either uninformed or misinformed about AT availability and applicability for the potential user.
Lack of understanding about the importance of inclusion	(Yoxal & Nath, 2012); (Baxter et al., 2012)	Families/Carers do not perceive inclusion as important and critical for users.
Lack of understanding or misunderstanding of the advantages and benefits of using a PCT	(Thompson et al., 2013); (Bodine, 2012); (Enderby et al., 2013); (Baxter et al., 2012); (Hoogerwerf, 2016)	Technology is perceived as not useful and not responding to the actual Needs of the user.
Lack of understanding about the potential of the user	(Borgestig, 2016); (Baxter et al., 2012)	Abilities of the PwD are underestimated or overestimated due to lack of appropriate assessment.
Lack of appropriate training that is required in order to assist the user	(Borgestig, 2016); (Light & McNaughton, 2012)	Families/Carers do not go through the appropriate training in order to assist the user.
Lack of skills required in order to assist the user	(Johnson et al., 2006); (Borgestig,	Some of them lack mainstream technical skills which makes

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	2016); (Light & McNaughton, 2012)	usage and support of PCT very difficult.
Lack of appropriate training	(Borgestig, 2016); (Light & McNaughton, 2012); (Baxter et al., 2012)	No appropriate training is provided for families and caregivers.
No time available to support the user	(Borgestig, 2016); (Light & McNaughton, 2012); (Baxter et al., 2012)	Families/Carers are busy providing assistance with daily routines and they lack spare time to support and encourage the usage of PCT.
Lack of motivation to support the user	(Johnson et al., 2006); (Baxter et al., 2012)	The user's communication partners believe they could understand the user without a device and thus they are not motivated to support usage.

4.5. PCT retailers

Barriers	References	Description
Lack of information about PCT	(Hoogerwerf, 2016)	The existence of a large variety of PCT leads to lack of information for all of them.
Lack of qualified professionals	(Borgestig, 2016); (Hoogerwerf, 2016)	Professionals are not qualified or have no appropriate training.
Constant training of the professionals	(Borgestig, 2016); (Hoogerwerf, 2016)	The fast development of PCT requires constant training. There are no regular courses with key professional organizations.
Costs for acquiring the whole range of PCT	(Yoxal & Nath, 2012); (Enderby et al., 2013); (Hoogerwerf, 2016)	Costs for acquiring the whole range of PCT for demo and assessment is too high due to the fast development of new options.

4.6. Teachers

Barriers	References	Description
Lack of information about PCT	(Borgestig, 2016); (Enderby et al., 2013); (Baxter et al., 2012)	Teachers lack information about students' impairments.

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		Teachers need access to services to support students' use of computer as AT in educational tasks.
Lack of training on assisting with PCT	(Borgestig, 2016); (Enderby et al., 2013) (Baxter et al., 2012)	Teachers lack training and curricular materials to support PCT implementation in educational programs.
Lack of motivation	(Baxter et al., 2012)	Teachers are not motivated to invest time and effort.
Lack of understanding about the importance of inclusion	(Borgestig, 2016); (Enderby et al., 2013); (Baxter et al., 2012)	Teachers are usually unaware of the critical need for early inclusion of students in the educational process.
Lack of understanding about the potential of the users	(Borgestig et al., 2016); (Enderby et al., 2013); (Baxter et al., 2012)	Teachers are unaware of cognitive evaluation methodologies for people with disabilities, which leads to the underestimation of students' potential.
No time to assist the users	(Borgestig, 2016);	Teachers are not motivated to invest additional time and effort for training and adoption of new technologies in the curriculum.

4.7. Other people

Barriers	References	Description
Lack of understanding about the potential of the user	(Najafi, Friday, & Robertson, 2008); (Baxter et al., 2012); (Hoogerwerf, 2016)	Society, including media, often reproduces a stereotyped view of disability.
Lack of understanding about the importance of inclusion	(Johnson et al., 2006); (Baxter et al., 2012); (Hoogerwer, 2016)	Adopting the stereotyped view of disabilities leads to underestimation of users' potential and thus luck of motivation to support inclusion.
Prejudice	(Baxter et al., 2012); (Hoogerwerf, 2016)	Society, including media, often reproduces a stereotyped view of disability. The medical/deficit model of disability prevails, thus discouraging PCT.

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Stigmatization	(Baxter et al., 2012); (Hoogerwerf, 2016)	The use of PCT might be interpreted as a sign for a progression of a disease and/ or nearing of death.
Social exclusion	(Yoxal & Nath, 2012); (Najafi, Friday, & Robertson, 2008); (Baxter et al., 2012); (Hoogerwerf, 2016)	Disabled people are more likely to be less socially connected than others. They lack support of peers which might be critical for acquiring new skills.

4.8. Laws and regulations

Barriers	References	Description
Lack of or partial funding for some PCT	(Yoxal & Nath, 2012); (Borgestig, 2016); (Hoogerwerf, 2016)	The cost of the technology for the end user and/or for the provider is too high, especially where public funding is not sufficient.
Complex assessment process	(Borgestig, 2016); (Hoogerwerf, 2016)	Lack of collaboration and coordination among public institutions leads to complications in the assessment process.
Complex application for funding	(Borgestig, 2016); (Hoogerwerf, 2016)	Legislation sets complex application procedures.

4.9. Environment

Barriers	References	Description
Not adapted to the requirements of PCT	(Bodine, 2012); (Enderby et al., 2013); (Najafi, Friday, & Robertson, 2008); (Baxter et al., 2012)	Usually environmental adaptations are needed in order to use a certain technology. In many cases home and public spaces are not adapted.
Lack of inclusive design of the mainstream technology	(Bodine, 2012); (Borgestig, 2016); (Light & McNaughton, 2012); (Baxter et al., 2012)	Mainstream technology is not adapted to PwD.

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4.10. PCT equipment

Barriers	References	Description
Need of maintenance	(Bodine, 2012); (Borgestig, 2016); (Enderby et al., 2013)	Parents and teachers cannot always maintain use of AT after withdrawal of service.
Repairs	(Bodine, 2012); (Borgestig, 2016)	The repair process is time consuming and costly. No information is provided about repair and maintenance.
Complex set-up	(Bodine, 2012); (Borgestig, 2016); (Enderby et al., 2013); (Light & McNaughton, 2012); (Najafi, Friday, & Robertson, 2008)	Set-up of the system is complex and requires various skills and training.
Mounting required for some PCT	(Bodine, 2012); (Enderby et al., 2013);	Some devices need to be mounted and certain environmental adaptations need to be done.
Lack of some features in a PCT	(Johnson et al., 2006); (Bodine, 2012); (Borgestig, 2016); (Light & McNaughton, 2012)	Some of the PCT are not good enough, they lack some of features required by the PwD (e.g. appropriate vocabulary or voice in a PCT) due to lack of understanding of the needs of PwD or due to the lack of available technology.
Complexity of high-tech PCT	(Johnson et al., 2006); (Borgestig, 2016); (Enderby et al., 2013); (Najafi, Friday, & Robertson, 2008); (Mavrou et al., 2016)	System is difficult to use for the users, caregivers and service providers who are not well trained or lack any training at all.
Lack of localization for many countries and languages	(Light & McNaughton, 2012); (Hoogerwerf, 2016)	Lack of localization (PCT, instructions, training materials) for many countries and languages. Many devices are unavailable on national markets. Training is difficult or even impossible to provide across countries.
Some PCT require another person to support the user	(Johnson et al., 2006); (Borgestig, 2016); (Enderby et al., 2013)	Some users need assistance from a trained carer in order to use a PCT device.

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Lack of inclusive design – most PCT are not mainstream devices, they are easily recognized as assistive devices	(Johnson et al., 2006); (Bodine, 2012); (Light & McNaughton, 2012)	Most PCT devices are easily recognized as assistive devices, which leads to fear of stigmatization and avoidance of usage.
Lack of usability	(Light & McNaughton, 2012); (Baxter et al., 2012)	The system is too difficult to use.
Bad user experience	(Borgestig, 2016); (Light & McNaughton, 2012); (Najafi, Friday, & Robertson, 2008); (Baxter et al., 2012); (Hoogerwerf, 2016)	Some PCT are poorly designed leading to bad user experience and erroneous conclusions for lack of prerequisite skills.

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DELIVERABLE 2

Identification, definition and analysis of existing and future barriers to the use of PCT and potential benefit of its deployment

1. CONTENTS

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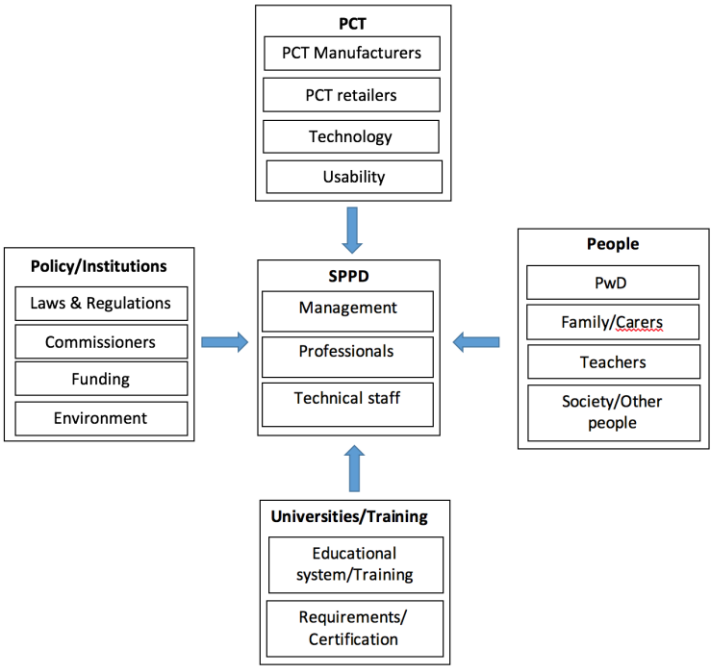
2. INTRODUCTION

This deliverable provides the theoretical background for the questionnaire to be presented in D3: Questionnaire covering potential barriers. The barriers that are identified in the literature review in D1 (Grinberg, Hristova, & Kadreva, 2017) are analysed and grouped according to some general reasons for their existence.

In D1, a lot of barriers have been identified. They are presented in lists organized by different parties concerned. In the current deliverable, we are only interested in the barriers to PCT for SPPD. These barriers however depend on the barriers related to other stakeholders. These dependencies are schematically shown in Figure 1.

Figure 1: Dependence of the barriers to PCT for SPPD on barriers related to other concerned parties.



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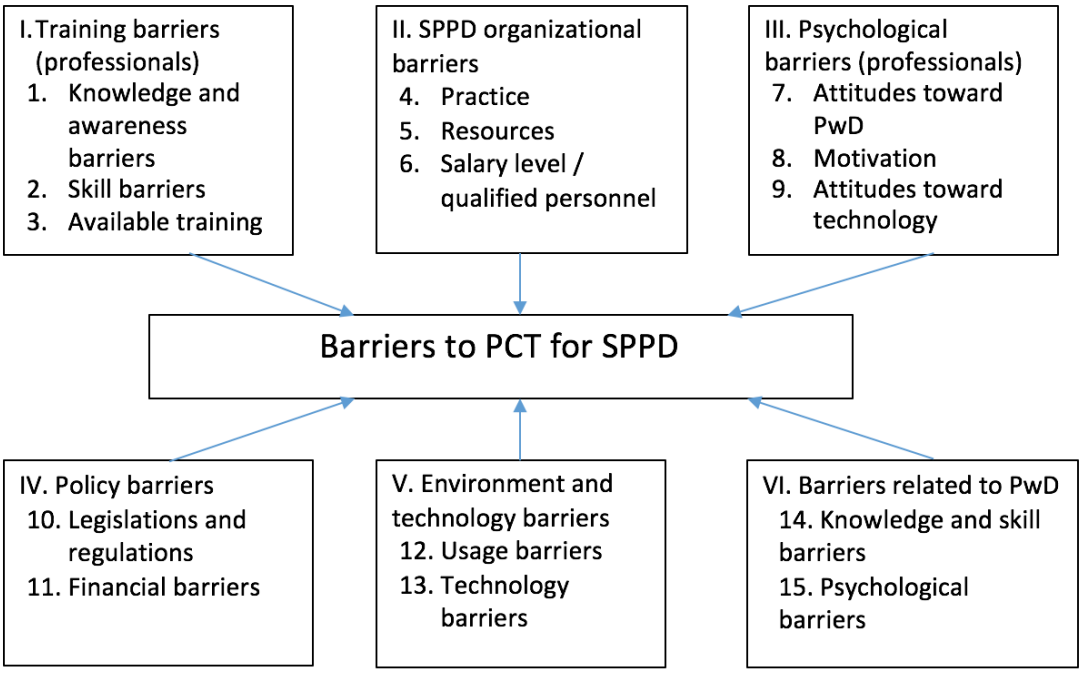
3. ANALYSIS AND SYSTEMATISATION

The list of barriers, presented here, is compiled using the barriers identified in D1 (Grinberg, Hristova, & Kadreva, 2017) and some additional barriers. In D2 the list of barriers to PCT for SPPD is organized in groups related to the main reason for a barrier to exist. The structured list that follows will be used as a reference for the questions included in the questionnaire and ensures that both behaviors with respect to PCT (behaviorally expressed barriers) and the reasons for them will be adequately represented.

Grouping is done after analysing and systematic review of all the barrier identified in D1. A general structure of potential and existing barriers is made taking into account two main dimensions (see Figure 2):

- What is the source of the barriers (e.g. if they are related to SPPD or PwD)
- What are the potential strategies that could be used to overcome a specific group of barriers (e.g. training of professionals or policy change)

Figure 2: Dependence of the barriers to PCT for SPPD on barriers related to other concerned parties



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The structured list of barriers to PCT for SPPD will be used for the design and development of the questionnaire for SPPD. In such a way a questionnaire could be developed that accounts for the most important barriers to the uptake and use of PCT.

4. STRUCTURED LIST OF BARRIERS

4.1. Training barriers

Knowledge and awareness barriers

Those barriers are related to the lack of knowledge and awareness about the existing PCT. This group of barriers is related to training (formal education, refresher courses, or later training) - deficiency or ineffectiveness of education or the system of refresher courses to make professionals in SPPD aware of the available PCT and the benefits from them. Sometimes partial knowledge of PCT and some of their characteristics may be available but be incomplete and insufficient for PCT deployment.

a) Lack of knowledge of the existing PCT (mainstream or specialized)

b) Lack of knowledge of the benefits of PCT

c) Lack of knowledge in using PCT (including assessment, solution identification, installation and management)

d) Lack of knowledge in instructional strategies

e) Lack of knowledge about ICT in general

f) Lack of understanding or misunderstanding of the advantages and benefits of using PCT

g) Lack of training and knowledge about assessment and evaluation process in PCT selection a specific user

h) Lack of understanding about the importance of PCT for inclusion

i) Lack of understanding about the potential of users with various disabilities

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Skill barriers

This group of barriers can be combined with the previous on or exist even if there is knowledge about PCT as its effective usage is related to many practical skills, interventions and practices that require hands-on training.

a) Lack of technology skills

b) Lack of computer skills

c) Lack of intervention skills

Available training

There is lack of available training about PCT - both during formal education or on-the-job trainings.

4.2. SPPD Organizational Barriers

Practice barriers

Existing long-term practices that are not based on official regulations or legislation (although in some cases it may seem so) but are adopted as formal or informal rules in a given organization – SPPD, commissioners, or by other institutions (e.g. educational) (Beukelman & Mirenda, 2013)

a) SPPD management decisions on spending on PCT

b) Preference for standard services at the expenses of PCT based services

Lack of resources barriers

In some cases, SPPDs lack resources have limitations on personnel, time, and infrastructure related to PCT due to insufficient income or funding.

a) Personnel

b) Time

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c) Infrastructure

Salary level

a) Difficulties in recruitment of qualified professionals

b) Difficulties in retaining qualified professionals

4.3. Psychological Barriers

Attitude towards PwD

The SPPD professionals' attitudes, beliefs and expectations about the PwD and PCT can be a major barrier to PCT usage.

a) Attitudes towards PwD

b) Beliefs about the capabilities of PwD

Motivational barriers

The lack of motivation can be caused by low salaries, excess of additional duties, and weak pressure from the environment to use PCT.

a) SPPD and professionals are not motivated to use PCT as it requires more time/effort

b) Lack of motivation due to efforts and time needed for acquiring additional competencies

Attitudes towards technology

The negative attitudes of professionals toward technology in general and PCT in particular can be an important barrier.

a) Attitudes towards ICT in general

b) Attitudes towards PCT specifically

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4.4. Policy Barriers

Legislative and regulatory barriers

Legislative and regulatory decisions that affect PwD and SPPD. Specific laws, regulations, and rules that settle legally everything related to PCT from lists of devices, which are identified as needed by PwD to services involving PCT.

a) Social service regulations

b) Social service commissioning

c) Legislation and regulations about inclusive education

d) Regulations for acquiring PCT by SPPD – how it is received, applications, procedures, etc.

e) Regulations for acquiring PCT by PwD – how it is received, applications, procedures, etc.

f) Access to social services

Financial barriers

The financial barriers can be related to funding, maintenance, and replacement of PCT but also to the financial capability of a SPPD to purchase PCT, including commissioning.

a) Acquiring a PCT by SPPD

b) Acquiring a PCT by PwD

c) Maintenance, repairs, and replacement of PCT

4.5. Environment & Technology Barriers

Usage barriers

Even when PCT is available, it may not be used for various reasons related to the environment and the available support technology that can limit PCT usage.

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a) Lack of opportunities to use PCT (e.g. lack of communication partners)

b) Environmental barriers – barriers in the environment that make using PCT impossible (e.g. lack of mobility adaptation, lack of internet access)

c) Connectivity problems, Wi-Fi availability and quality

Technology barriers

Part of the barriers in this group can be due to lack of features, usability or require advanced ICT skills.

a) Lack of features in specialized PCT

b) Lack of inclusive design in mainstream technology

c) Complexity of high-tech PCT – ICT skills required

d) Lack of usability

4.6. Barriers related to PwD and their families

Although these barriers concern PwD (see D1, Grinberg, Hristova, & Kadreva, 2017), they can be a reason for barriers to PCT for SPPD as if the final users don't want to use the technology, SPPD will not offer it. Here, the most common barriers to PwD are listed.

PwD knowledge and skill barriers

PwD and their families do not want to use PCT because of lack of knowledge and skills.

a) Lack of knowledge about the benefits of PCT

b) Lack of skills in using PCT

c) Lack of general ICT skills

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PwD psychological barriers

PwD and their families do not want to use PCT because of negative attitudes and lack of motivation.

a) Fear of being stigmatised

b) No perceived need of usage

c) No motivation to spend time and effort in learning how to use PCT

d) Negative attitudes towards technology

5. POTENTIAL BENEFITS OF DEPLOYMENT OF PCT

If the barriers described in the preceding section are overcome, the potential benefits of PCT are numerous, as the experience in this field has shown in the last twenty years (Beukelman & Mirenda, 2013). PCT can lead to improvement in the following areas:

1. **Everyday life**
    a) daily activities
    b) independent living
    c) safety
    d) participation in social life
2. **Education**
    a) All levels and forms of education
    b) Learning
3. **Work**
    a) jobs and employment
    b) training
4. **Leisure**
    a) leisure activities
    b) hobbies
5. **Health and Wellbeing**

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6. **Choice and control**

7. **Communication**

8. **Mobility**

As the lack of understanding of the benefits of PCT is a major obstacle to its adoption and use it will be covered in the questionnaire.

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DELIVERABLE 3

Questionnaire covering potential barriers to the uptake of PCT

1. CONTENTS

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2. INTRODUCTION

This deliverable presents a questionnaire designed to provide information about the barriers to PCT pertinent to SPPD across the EU. The questionnaire builds on systematization of the barriers for SPPD identified in D2: Identification, definition and analysis of existing and future barriers to the use of PCT and potential benefit of its deployment. The design of the questionnaire aims at covering the most important groups in sufficient detail. At the same time, we also aim at keeping the questionnaire not too long.

In D2, the main groups and sub-groups of barriers have been put forward based on the prerequisites and enabling factors for the barriers existence. The structure of the questionnaire is based on the suggested classification. For each group of questions, a reference to the corresponding barrier group in D2 is used.

3. PROCEDURE & RESPONDENTS

Respondents are going to be recruited by e-mail using the

- Professionals working with PwD in SSPD
- Heads/managers of SSPD

Data is going to be collected anonymously in order to assure unbiased answers to the questions.

The questionnaire is going to be implemented in Google forms.

It will be available in the following languages:

- English
- French
- German
- Dutch
- Bulgarian
- Norwegian
- (Spanish)
- (Greek)

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4. DESCRIPTION OF THE QUESTIONNAIRE

Here are presented the questions that are going to be used to collect information about potential barriers to the uptake of PCT.

The headings referring to the barrier are just for internal use and will not be presented in the actual questionnaire.

The order of the sections in the actual questionnaire is going to be different than the one presented here.

For the barriers a 7-point Likert scale is used ranging from '1 = strongly disagree' to '7 = strongly agree'. Some of the questions are formulated in a positive manner, some of the questions are formulated in a negative manner.

5. ANALYSIS AND REPORT STRATEGY

5.1. Information about the social services and demographics

Descriptive statistics (tables and figures) will be provided for the information about the social services and for the demographic information.

5.2. Barriers to the uptake of PCT

For some of the questions a reversed scoring will be applied in order to have higher values always corresponding to a greater agreement with the existence of a given barrier.

For each group of barriers, the average rating for all of the questions retained to that group will be calculated as a measure of the perceived strength of the barrier group.

Descriptive statistics (tables and figures) will be provided for each group of barriers.

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6. QUESTIONNAIRE

6.1 Informed consent

You are being invited to participate in a survey for professionals working in Social Service Providers for Persons with Disabilities.

This survey covers several European countries and is carried out by ASSIST – Assistive Technology (www.assistfoundation.eu) for the European Association of Service providers for Persons with Disabilities (www.easpd.eu).

If you agree to take part in this study, you will be asked to complete an online questionnaire asking about your opinion on several matters related to Assistive technology usage. It will take you approximately 15 minutes to complete the survey.

Participation is completely voluntary and you can withdraw at any time. Your answers are collected anonymously and they will remain confidential.

If you have questions about this project, please, contact prof. Maurice Grinberg at assist.foundation.bg@gmail.com

Your participation in the study would be highly appreciated. Completing the questionnaire, you would contribute to our efforts to improve the quality of life of persons with disabilities.

By clicking the button below you indicate that you agree to participate in this study.

6.2. Introduction

In the questionnaire we are interested in **Assistive Technology** - technology based solutions that promote quality of life of the service users.

Please, read carefully the following explanation before continuing with the questionnaire!

Assistive Technology is **any product or technology-based service or solution** that enables people with activity limitations of all ages (children, adults or elderly) in their:

- daily lives
- work
- education
- leisure

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- independence

Assistive Technology is **any** technology – specialized or mainstream - that can be personal equipment for:

- mobility
- communication
- social connectedness
- access to digital environments
- technology for safety, telecare, remote monitoring

6.3. Social Service Provider and Assistive Technology Usage

Those questions refer to the Social Service Provider that you work for:

1. Country
   (Choose from a drop-down list)

2. The Service Provider that you work for provides social services for
   (check all that applies)

- Children with disabilities
- Adults with disabilities
- Other

3. The Social Service Provider organization that you work for is a:

- Governmental organization
- Privately owned organization
- NGO (non-governmental organization)
- Umbrella organization
- Other

4. Your organization provides the following types of social services:

- Personal services to PwD
- Consultancy services to PwD and/or their families
- Consultancy services to other professionals and/or organizations
- Trainings for PwD and/or their families
- Trainings for other professionals and/or organizations
- Other

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5. In the Social Service do you (your organization) work with people with disabilities that affect their:
   (check all that applies)

- Vision
- Hearing
- Movement (Physical/Motor)
- Communication
- Cognition (Thinking, Learning, Remembering)
- Mental Health
- Other…….

6. Number of staff in the organization:
   …….
7. Number of service users:
   …….
8. Do you and the persons with disabilities that you work with use the following Assistive Technology
   (No - Sometimes – Yes)

- wheelchairs
- hearing aids
- screen readers
- braille and Braille printers
- communication devices (speech generating computer software for symbol or text communication)
- personal emergency response systems/telecare
- health monitoring systems
- home automation - smart homes & environmental control
- memory aids and planning apps (e.g. apps for planning, reminder apps)
- text-to-speech software
- head pointing devices for alternative computer access
- voice recognition software
- voice control for alternative computer access
- eye gaze for alternative computer access

9. How many of the service users use assistive technology?

   …….
10. How many of the service users use assistive technology as part of the services being provided by the SSP?

    …….

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11. How many of the staff of the Social Service Provider are using assistive technology in their work with service users?

12. How many experts on Assistive Technology are there in your organization?

13. To what extent do you agree that your organization makes a good use of assistive technology in provision of social services?

(1 = strongly disagree, 7 = strongly agree)

6.4. Training Barriers

Group 1: Knowledge and awareness barriers & Group 2: Skill barriers

1. To what extent do you agree that **professionals** working with persons with disabilities in social services have the following knowledge and skills:
   (1 = strongly disagree, 7 = strongly agree)

   a. knowledge about the existing assistive technology (mainstream or specialized)
   b. knowledge about the benefits of using assistive technology for persons with disabilities
   c. knowledge in using assistive technology when working with persons with disabilities
   d. knowledge in using assistive technology for assessment and solution identification
   e. knowledge in assistive technology installation and management
   f. technology skills to use assistive technology
   g. computer skills to use assistive technology
   h. intervention skills to use assistive technology

2. What percentage of professionals working with persons with disabilities that you know have good knowledge in assistive technology?
   (Please, enter a number between 0 and 100)

3. To what extent do you agree that **professionals** working with persons with disabilities in social services have:
   (1 = strongly disagree, 7 = strongly agree)

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a. enough courses in assistive technology during their formal education
b. enough training/refresher courses in assistive technology after they have started working
c. enough training in general ICT (information and communications technology).

Group 3: Available training

4. To what extent do you agree that there are **enough available courses in assistive technology offered** for professionals working with persons with disabilities in social services:
   (1 = strongly disagree, 7 = strongly agree)

   a. during formal education
   b. after they start working

6.5. SPPD Organizational Barriers

Group 4: Practice barriers

5. To what extent do you agree that **the management of** social services:
   (1 = strongly disagree, 7 = strongly agree)

   a. is willing to spend budget on assistive technology
   b. prefers standard services at the expense of assistive technology based services
   c. is willing to re-organize the social service in order to use more assistive technology

6. To what extent do you agree that **commissioners** of social services and **commissioners** of assistive technology have the following knowledge:
   (1 = strongly disagree, 7 = strongly agree)

   a. knowledge about the existing assistive technology (mainstream or specialized)
   b. knowledge about the benefits of using assistive technology for persons with disabilities

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Group 5: Lack of resources barriers

7. AT **in the social services** assistive technology is underused because there is a lack of resources in terms of:
   (1 = strongly disagree, 7 = strongly agree)

   a. personnel
   b. time
   c. infrastructure
   d. budget

Group 6: Salary level in the social sector

8. To what extent do you agree with the following statements:
   (1 = strongly disagree, 7 = strongly agree)

   a. the salary level in the social sector is too low
   b. there are difficulties in recruitment of qualified professionals
   c. there are difficulties in retaining qualified professionals

6.6. Psychological Barriers

Group 7: Attitudes toward PwD

9. To what extent do you agree that **persons with disabilities do not need assistive technology** because:
   (1 = strongly disagree, 7 = strongly agree)

   a. they are not capable of using it
   b. they are doing fine without it
   c. they have found other ways to cope with their daily needs and activities
   d. they have mastered some skills that are not mastered by people without disabilities
   e. being disabled in one modality makes you develop your skills in different modalities

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Group 8: Motivational barriers

10. To what extent do you agree that:
(1 = strongly disagree, 7 = strongly agree)

    a. using AT by professionals working in Social Service Providers demands more time than they can spend
    b. using AT by professionals working in Social Service Providers demands more effort than they can spend
    c. professionals working in Social Service Providers don't like working with technology in general

Group 9: Attitudes towards technology

11. To what extent do you agree that using technology can help persons with disabilities and improve their:
(1 = strongly disagree, 7 = strongly agree)

    a. daily life
    b. independence
    c. work
    d. social life
    e. education and training
    f. leisure
    g. family and friends relations
    h. safety
    i. self-esteem
    j. communication
    k. mobility
    l. health and wellbeing
    m. choice and control

12. To what extent do you agree that using computers and tablets (iPads) by persons with disabilities:
(1 = strongly disagree, 7 = strongly agree)

    a. threatens their privacy
    b. diminishes social contacts

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c. will not help in their daily life

13. To what extent do you agree that using telecare (technology for remote monitoring) by persons with disability
(1 = strongly disagree, 7 = strongly agree)

a. threatens their privacy
b. diminishes social contacts
c. will not help in their daily life

14. To what extent do you agree that:
(1 = strongly disagree, 7 = strongly agree)

a. using technology is a threat to some jobs in the social sector
b. using technology will create new jobs in the social sector

6.7. Policy Barriers

Group 10: Legislative and regulatory barriers

15. To what extent do you agree with the following statements:
(1 = strongly disagree, 7 = strongly agree)

a. The application process for assistive technology for Social Service providers is clear and well regulated
b. The application process for assistive technology for Social Service providers is long and difficult
c. The application process for assistive technology for persons with disabilities is clear and well regulated
d. The application process for assistive technology for persons with disabilities is long and difficult

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Group 11: Financial barriers

16. To what extent do you agree that there is enough funding for persons with disabilities for:
(1 = strongly disagree, 7 = strongly agree)

    a. assistive technology for Visual impairments
    b. assistive technology for Hearing impairments
    c. communication aids (high-tech)
    d. alternative computer access (e.g. eye gaze or head tracking)
    e. assistive technology for mobility impairments
    f. home modifications
    g. smart homes
    h. telecare

17. To what extent do you agree that there is enough funding for assistive technology for social service providers?

    (1= strongly disagree, 7 = strongly agree)

6.8. Environment & Technology

Group 12: Usage barriers

1) To what extent do you agree that:
(1 = strongly disagree, 7 = strongly agree)

    a. Physical environment is not adapted to assistive technology (e.g. some places are not accessible)
    b. Environment is not adapted to high-tech assistive technology (e.g. there is no internet access or it is not stable)
    c. Physical environment is not adapted to assistive technology (e.g. homes are not adapted to high-tech AT)
    d. Social environment is not adapted to assistive technology (e.g. there are no communication partners)

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Group 13: Technology barriers

2) To what extent do you agree with the following statements:

(1 = strongly disagree, 7 = strongly agree)

a. assistive technology is easy to use
b. using assistive technology requires a lot of computer skills
c. using assistive technology requires a lot of learning
d. assistive technology has all the features and functionalities needed by persons with disabilities
e. mainstream technology is not designed to be used by persons with disabilities

6.9. Barriers related to Persons with Disabilities and their Families

Group 14: PwD knowledge and skill barriers

3) To what extent do you agree that **persons with disabilities** have the following knowledge and skills:

(1 = strongly disagree, 7 = strongly agree)

a. Knowledge about the existing assistive technology (mainstream or specialized)
b. Knowledge about the benefits of using assistive technology
c. Knowledge in using assistive technology
d. Technology skills to use assistive technology
e. Computer skills to use assistive technology
f. Enough training in using assistive technology

4) What percentage of persons with disabilities that you know have good knowledge in assistive technology?

(Please, enter a number between 0 and 100)

5) To what extent do you agree that **families and caregivers** of persons with disabilities have the following knowledge and skills:

(1 = strongly disagree, 7 = strongly agree)

a. Knowledge about the existing assistive technology (mainstream or specialized)
b. Knowledge about the benefits of using assistive technology
c. Knowledge in using assistive technology

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d. Technology skills to use assistive technology
e. Computer skills to use assistive technology
f. Enough training in using assistive technology

6) What percentage of **families and caregivers** of persons with disabilities that you know have good knowledge in assistive technology?

(Please, enter a number between 0 and 100)

Group 15: PwD psychological barriers

7) To what extent do you agree with the following statements about persons with disabilities and their **families and caregivers**:

tt. Persons with disabilities don't like technology in general
uu. Families of persons with disabilities don't like working with technology in general
vv. Using assistive technology requires by families of persons with disabilities more time than they can spend
ww. Using assistive technology requires by families of persons with disabilities more effort than they can spend

8) To what extent do you think that **persons with disabilities and their families** would agree that persons with disability do not need assistive technology because:

a. they are not capable of using it
b. they are doing fine without it
c. have mastered some skills that are not mastered by people without disabilities
d. being disabled in one modality makes you develop your skills in different modalities
e. they have found other ways to cope with the daily needs and activities
f. using assistive technology makes the person looks strange for the other people
g. using assistive technology makes the person looks different from the others

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6.10. Demographic information

1. Your age

2. Your gender
- Male
- Female

3. Your position
- Head/director of the organization
- Managerial position
- Administrative position
- Professional working with people with disabilities – speech-language therapist, social worker, psychologist, physical therapist, occupational therapist, etc.

4. Professional experience in working with people with disabilities ……. years

5. What is your HIGHEST educational level?
    a. high-school
    b. college
    c. bachelor degree
    d. master degree
    e. PhD
6. Program that you have graduated: ……

Group 1 Knowledge barriers and Group 2 – Skills barriers

7. How many training courses in assistive technology did you have during your formal education?

    …….

8. How many training courses in assistive technology **did you have** after you started working?

    …….

9. How many training courses in assistive technology **have you been offered** after you started working?

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…….

10. How often do you use:
    (daily – several time a week – once a week – several times a month – once a month – never)

- e-mail
- social media (e.g. facebook)
- messengers (e.g. viber, skype, facebook messenger)
- MS Word or similar word processing software
- MS Excel or similar spreadsheet application
- MS Powerpoint or similar presentation software

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DELIVERABLE 4

Technical Report from a questionnaire covering potential barriers to the uptake of PCT

1. CONTENTS

With the financial support of the European Union Programme for Employment and Social Innovation "EaSI" (2014-2020)

2. INTRODUCTION

This deliverable presents the results form a questionnaire designed to provide information about the barriers to PCT pertinent to SPPD across the EU. The questionnaire builds on systematization of the barriers for SPPD identified in D2: Identification. definition and analysis of existing and future barriers to the use of PCT and potential benefit of its deployment. The design of the questionnaire aims at covering the most important groups in sufficient detail. In D2, the main groups and sub-groups of barriers have been put forward based on the prerequisites and enabling factors for the barriers existence. The structure of the questionnaire is based on the suggested classification and for each group of questions. a reference to the corresponding barrier group in D2 has been given.

3. QUESTIONNAIRE AND PROCEDURE

The questionnaire is implemented in Google forms in the following languages:

- English - https://goo.gl/forms/omrzCpXP9URMt8lp2
- French - https://goo.gl/forms/4GjgM2xVem0lVzYm1
- Bulgarian - https://goo.gl/forms/wFlEbAQWsYHPoZ1o1
- Hungarian - https://goo.gl/forms/3aMdrZFdIJQQU8l32
- Spanish – https://goo.gl/forms/BTZey7JMwwD9YvNp2
- Portuguese – https://goo.gl/forms/Il0nVKp5q1frdOg73
- Greek – https://goo.gl/forms/2pA5R8xq4NFGpbMU2
- German - https://goo.gl/forms/YyATeHSMUsFy5tL22

For the evaluation of the severity of the barriers, a 7-point Likert scale was used ranging from '1 = strongly disagree' to '7 = strongly agree'. Some of the questions have a positive formulation, where higher scores mean a better situation with respect to PCT usage and others are formulated in a negative way, where higher scores mean a worse situation with respect to PCT.

Respondents were recruited by e-mail using information from the contact lists of ASSIST – Assistive Technologies, EASPD member lists, ISAAC member lists, PCT providers client lists, partner organizations in various countries.

Invitations to participate in the research and spread the information among colleagues, have been sent to:

- Professionals working with PwD in SSPD
- Heads/managers of SSPD

Data was collected anonymously to assure unbiased answers to the questions.

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4. RESULTS: INFORMATION ABOUT THE SOCIAL SERVICES AND DEMOGRAPHICS

In this technical report, descriptive statistics are provided for the information about the social services and for the demographic information of the participants. Data is presented for each of the four regions surveyed as well as for the total sample.

For each question, we present fist the question with the possible answers, then a table with descriptive statistics for the obtained answers.

4.1 Participants by Country and by Region

Although, participants from 17 countries took part in the survey, their number was not uniformly distributed (see **Error! Reference source not found.**).

Table 1: Number of participants that took part in the survey and number of participants that are included in the analysis (with the corresponding geographical region).

Country	Number of participants	Included	Region
Bulgaria	65	28	East
Hungary	26	26	Central
Spain	11	11	South
United Kingdom	9	9	North
Greece	5	5	South
Germany	4	4	North
France	3	3	North
Austria	2	2	North
Norway	2	2	North
Sweden	2	2	North
Croatia	1	1	Central
Denmark	1	1	North
Finland	1	1	North
Italy	1	1	South
Latvia	1	1	East
Netherlands	1	1	North
Poland	1	1	Central
Romania	1	1	East
TOTAL	**137**	**100**	

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To be able to make informative conclusions from the data, 4 groups of respondents were formed – North, South, Central and East groups

To achieve a more uniform distribution across the groups for Bulgaria from the 65 participants from Bulgaria, 28 participants were randomly selected.

Table 2: **Number of participants that are included in the analysis by geographical region**.

Region	Number
Central	28
East	30
North	25
South	17
Total	100

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4.2. Information about the SSP

Services for children or adults

Q: The Service Provider that you work for provides social services for *(check all that applies):*

- Children with disabilities
- Adults with disabilities
- Other

Table 3: Percentage of the participants working in SSP offering services for adults and/or children. The sum of the percentages is greater than 100 as some SSP provide services for both children and adults.

Region	The Social Service Provider provides services for:	
	children with disabilities	adults with disabilities
Central	82%	82%
East	77%	37%
North	80%	72%
South	29%	100%
Total	71%	69%

Organization type

Q: The Social Service Provider that you work for is a:

- NGO (non-governmental organization)
- Municipal or governmental organization
- Business organization
- Association of social service providers
- Other

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Table 4: Number of participants working in different types of Social Service Providers.

Region	NGO	Municipal or governmental organization	Association of social service providers	Business organization	Other	Total
Central	11	6	8		3	28
East	10	19	1			30
North	9	8	1	4	1	25
South	9	1	7			17
Total	39	34	17	4	4	100

Types of services provided

Q: Your organization provides the following types of social services:

- Personal services to PwD
- Consultancy services to PwD and/or their families
- Consultancy services to other professionals and/or organizations
- Trainings for PwD and/or their families
- Trainings for other professionals and/or organizations
- Other

Table 5: Percentage of the participants working in SSP offering different types of services to PwD. The sum of the percentages is greater than 100 as some SSP provide several types of services.

Region	Personal services	Consultancy services to PwD and/or their families	Consultancy services to other professionals and/or organizations	Trainings for PwD and/or their families	Training for other professionals and/or organizations	Inclusive education	Other
Central	79%	86%	29%	39%	7%	7%	14%
East	90%	67%	30%	33%	13%	13%	7%
North	72%	60%	44%	76%	60%	16%	4%
South	88%	71%	41%	94%	53%	29%	6%
Total	82%	71%	35%	56%	30%	15%	8%

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Type of disability

Q: In the Social Service do you (your organization) work with people with disabilities that affect their:
(check all that applies)

- Vision
- Hearing
- Movement (Physical/Motor)
- Communication
- Cognition (Thinking. Learning. Remembering)
- Mental Health
- Other……

Table 6: Percentage of SSP working with users with different types of impairments

Region	Vision	Hearing	Movements	Communication	Cognition	Mental health
Central	64%	68%	80%	61%	57%	54%
East	43%	33%	57%	70%	83%	60%
North	72%	80%	96%	100%	100%	48%
South	59%	65%	65%	100%	94%	88%
Total	59%	60%	76%	80%	82%	60%

Number of staff in the organization

Q: Number of staff in the organization: ……

Table 7: Average number of staff working in the SSP**.**

Region	Average Number of Service Users
Central	569.1
East	108.2
North	457.1
South	240.6
Total	338.8

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Number of service users

Q: Number of service users: ……..

Table 8: Average number of Service Users.

Region	Average Number of Service Users
Central	569.1
East	108.2
North	457.1
South	240.6
Total	338.8

4.3. AT usage

Usage of different types of AT

Q: Do you and the persons with disabilities that you work with use the following Assistive Technology *(No - Sometimes – Yes)*

- wheelchairs
- hearing aids
- screen readers
- braille and Braille printers
- communication devices (speech generating computer software for symbol or text communication)
- personal emergency response systems/telecare
- health monitoring systems
- home automation - smart homes & environmental control
- memory aids and planning apps (e.g. apps for planning. reminder apps)
- text-to-speech software
- head pointing devices for alternative computer access
- voice recognition software
- voice control for alternative computer access
- eye gaze for alternative computer access

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Table 9: Percentage of SSP and/or service users using each of the following assistive technologies.

Assistive Technology	Central	East	North	South	Total
Wheelchairs	86%	72%	96%	82%	84%
Hearing aids	75%	48%	88%	82%	73%
Screen readers	48%	35%	83%	18%	48%
Braille and Braille printers	20%	19%	46%	12%	25%
Communication devices (speech generating computer software for symbol or text communication)	38%	37%	96%	29%	52%
Personal emergency response systems/telecare	18%	4%	48%	35%	26%
Health monitoring systems	29%	24%	56%	24%	34%
Home automation – smart homes & environmental control	20%	0%	64%	0%	23%
Memory aids and planning apps (e.g. apps for planning. reminder apps)	20%	17%	80%	18%	36%
Textto-speech software	41%	16%	88%	24%	44%
Head pointing devices for alternative computer access	35%	9%	64%	6%	31%
Voice recognition software	14%	4%	64%	12%	25%
Voice control for alternative computer access	15%	13%	60%	6%	26%
Eye gaze for alternative computer access	30%	25%	80%	6%	38%

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Percentage of service users using AT

Q: How many of the service users use assistive technology? …….

Table 10: Average Percentage of Service Users using AT

Region	Percentage of Service Users using AT
Central	30%
East	34%
North	67%
South	9%
Total	34%

Percentage of service users using AT as part of the service

Q: How many of the service users use assistive technology as part of the services being provided by the SSP?

Table 11: Average Percentage of Service Users using Assistive Technology as part of the service being provided by SSP.

Region	Percentage of Service Users using Assistive Technology as part of the service
Central	20%
East	22%
North	66%
South	5%
Total	27%

Percentage of professionals using AT in their work

Q: How many of the staff of the Social Service Provider are using assistive technology in their work with service users?

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Table 12: Average percentage of staff members of the SSP using assistive technology in their work with service users.

Region	Percentage of staff members using assistive technology in their work with service users
Central	21%
East	27%
North	78%
South	26%
Total	36%

Percentage of experts in AT

How many experts on Assistive Technology are there in your organization?

Table 13: Average percentage of experts in AT in SSP.

Region	Percentage of experts in AT
Central	11%
East	15%
North	50%
South	10%
Total	22%

Evaluation of AT usage in SSP

Q: To what extent do you agree that your organization makes a good use of assistive technology in provision of social services? *(1 = strongly disagree. 7 = strongly agree)*

Table 14: Average of good use of assistive technology in SSP. Ratings are made on a 7-point scale (1 = strongly disagree. 7 = strongly agree).

Region	Average of good use of assistive technology in SSP
Central	4.5
East	3.4
North	5.8
South	3.6
Total	4.3

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Technology as a help

Q: To what extent do you agree that using technology can help persons with disabilities and improve their: *(1 = strongly disagree. 7 = strongly agree)*

- daily life
- independence
- work
- social life
- education and training
- leisure
- family and friends relations
- safety
- self-esteem
- communication
- mobility
- health and wellbeing
- choice and control

Table 15: Average ratings of technology as a help to PwD. Ratings are made on a 7-point scale (1 = strongly disagree. 7 = strongly agree). Higher ratings mean more positive attitude towards technology as a help to PwD. (Differences are non-significant, according to a ANOVA.)

Region	Technology as a help
Central	6.5
East	6.3
North	6.6
South	6.1
Total	6.4

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4.4. Demographic Information about the Respondents

Age

Q: Your age …….

Table 16: Average age of the participants in the survey.

Region	Age
Central	48.6
East	42.8
North	45.6
South	44.6
Total	45.5

Gender

Q: Your gender

- Male
- Female

Table 17: Gender of the participants in the survey by region.

Region	Female	Male	Total
Central	22	6	28
East	27	3	30
North	19	6	25
South	14	3	17
Total	82	18	100

Position in the organization

Q: Your position

- Head/director of the organization
- Managerial position
- Administrative position
- Professional working with people with disabilities – speech-language therapist. social worker. psychologist. physical therapist. occupational therapist. etc.

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Table 18: Position of the participants in the survey by region.

Region	Head/ director	Managerial/ administrative position	Professional	IT/AT	Total
Central	5	7	15	1	**28**
East	11	3	16	0	**30**
North	2	3	13	2	**25**
South	2	3	12	0	**17**
Total	**20**	**16**	**56**	**3**	**100**

Professional experience

Q: Professional experience in working with people with disabilities ……. years

Table 19: Average professional experience (in years).

Region	Professional experience
Central	21.4
East	12.1
North	18.3
South	13.6
Total	16.5

Educational level

Q: What is your highest educational level?

- high-school
- college
- bachelor degree
- master degree
- PhD

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Table 20: Educational level of the participants in the survey by region

Region	High-school	College	Bachelor degree	Master degree	PhD	Total
Central	6	3	5	12	2	28
East	0	0	8	20	2	30
North	2	2	10	10	1	25
South	2	3	6	6	0	17
Total	10	8	29	48	5	100

5. RESULTS FOR PERCEIVED BARRIERS TO THE UPTAKE OF PCT

Descriptive statistics are provided for each group of barriers for each of the European regions studied as well as for all participants.

For some of the **questions a reversed scoring is applied in order to have higher values always corresponding to a greater agreement with the existence of a given barrier**. Such questions with inversed answers are marked with an asterisk (*).

For each group of barriers, the average rating for all of the questions related to that group is calculated as a measure of the perceived strength of the barrier group.

5.1. Knowledge and Training barriers

Group 1: Knowledge and awareness barriers

Q: To what extent do you agree that **professionals** working with persons with disabilities in social services have the following knowledge and skills: *(1 = strongly disagree. 7 = strongly agree)*

- knowledge about the existing assistive technology (mainstream or specialized)*
- knowledge about the benefits of using assistive technology for persons with disabilities*
- knowledge in using assistive technology when working with persons with disabilities*
- knowledge in using assistive technology for assessment and solution identification*
- knowledge in assistive technology installation and management*

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Table 21: Average ratings on the questions assessing professionals' knowledge about AT. Ratings are made on a 7-point scale (1 = strongly disagree. 7 = strongly agree). Data is recoded so higher ratings mean less knowledge. (Differences are not significant according to an ANOVA)

Region	Group 1: Knowledge Barriers
Central	4.1
East	4.3
North	4.2
South	4.0
Total	4.2

Group 2: Skill barriers

Q: To what extent do you agree that **professionals** working with persons with disabilities in social services have the following knowledge and skills: *(1 = strongly disagree. 7 = strongly agree)*

- technology skills to use assistive technology*
- computer skills to use assistive technology*
- intervention skills to use assistive technology*

Table 22. Average ratings on the questions assessing professionals' skills in using AT. Ratings are made on a 7-point scale (*1 = strongly disagree. 7 = strongly agree).* Data is recoded so higher ratings mean less skills(Differences are not significant according to an ANOVA)

Region	Group 2: Skill Barriers
Central	4.3
East	4.4
North	4.0
South	4.3
Total	4.2

Q: What percentage of professionals working with persons with disabilities that you know have good knowledge in assistive technology? *(Please. enter a number between 0 and 100)*

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Table 23. Average estimates of the percentage of professionals working with persons with disabilities that have good knowledge in assistive technology (Differences are non-significant according to an ANOVA)

Region	Percentage of professionals with good knowledge in AT
Central	38.0%
East	28.0%
North	32.3%
South	20.5%
Total	30.5%

Group 3: Training

Table 24. Average ratings on the questions assessing training and available training in assistive technology. Ratings are made on a 7-point scale (*1 = strongly disagree. 7 = strongly agree).* Data is recoded so higher ratings mean less available training. (Differences are not significant according to an ANOVA)

Region	Group 3: Training Barriers
Central	5.4
East	5.6
North	5.7
South	5.3
Total	5.5

3A. Training

Q: To what extent do you agree that **professionals** working with persons with disabilities in social services have: *(1 = strongly disagree. 7 = strongly agree)*

- enough courses in assistive technology during their formal education*
- enough training/refresher courses in assistive technology after they have started working*

Table 25. Average ratings on the questions assessing professionals' training in assistive technology. Ratings are made on a 7-point scale (*1 = strongly disagree. 7 = strongly agree).* Data is recoded so higher ratings mean less training. (Differences are not significant according to an ANOVA)

Region	3A: Training
Central	5.3
East	5.7
North	5.8
South	5.7
Total	5.6

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3B. Available training

Q: To what extent do you agree that there are **enough available courses in assistive technology offered** for professionals working with persons with disabilities in social services: *(1 = strongly disagree. 7 = strongly agree)*

- during formal education*
- after they start working*

Table 26. Average ratings on the questions assessing available training in assistive technology. Ratings are made on a 7-point scale (*1 = strongly disagree. 7 = strongly agree).* Data is recoded so higher ratings mean less available training. (Differences are not significant according to an ANOVA)

Region	3B: Available Training
Central	5.4
East	5.4
North	5.5
South	4.9
Total	5.3

Q: How many training courses in assistive technology did you have during your formal education? .....

Table 27. Average number of training courses in assistive technology during formal education.

Region	Professional Experience
Central	1.5
East	0.5
North	0.8
South	0.5
Total	0.9

Q: How many training courses in assistive technology **did you have** after you started working? .....

Table 28. Average number of training courses in assistive technology after start of the work.

Region	Professional Experience
Central	2.5
East	2.4
North	16.2
South	1.4
Total	5.8

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5.2. SPPD Organizational Barriers

Group 4: Practice barriers

Q: To what extent do you agree that **the management of** social services: *(1 = strongly disagree. 7 = strongly agree)*

- is willing to spend budget on assistive technology*
- prefers standard services at the expense of assistive technology based services
- is willing to re-organize the social service in order to use more assistive technology*

Q: To what extent do you agree that **commissioners** of social services and **commissioners** of assistive technology have the following knowledge: *(1 = strongly disagree. 7 = strongly agree)*

- knowledge about the existing assistive technology (mainstream or specialized*
- knowledge about the benefits of using assistive technology for persons with disabilities*

Table 29. Average ratings on the questions assessing the knowledge and attitudes about AT of the management and commissioners of social services. Ratings are made on a 7-point scale (*1 = strongly disagree. 7 = strongly agree).* Data is recoded so higher ratings mean stronger practice barriers. (Differences are not significant according to an ANOVA)

Region	Group 4: Practice Barriers
Central	4.6
East	4.2
North	4.1
South	3.8
Total	4.2

Group 5: Lack of resources barriers

Q: AT **in the social services** assistive technology is underused because there is a lack of resources in terms of: *(1 = strongly disagree. 7 = strongly agree)*

- personnel
- time
- infrastructure
- budget

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Table 30. Average ratings on the questions assessing the lack of resources as a barrier to AT usage. Ratings are made on a 7-point scale (*1 = strongly disagree. 7 = strongly agree).* Higher ratings mean stronger agreement that there is lack of resources. (Differences are not significant according to an ANOVA)

Region	Group 5: Lack of Resources Barriers
Central	5.2
East	5.1
North	4.9
South	5.0
Total	5.1

Group 6: Lack of qualified professionals in the social sector

Q: To what extent do you agree with the following statements: *(1 = strongly disagree. 7 = strongly agree)*

- the salary level in the social sector is too low
- there are difficulties in recruitment of qualified professionals
- there are difficulties in retaining qualified professionals

Table 31. Average ratings on the questions assessing the salary level and lack of qualified professionals. Ratings are made on a 7-point scale (*1 = strongly disagree. 7 = strongly agree).* Higher ratings mean stronger agreement that the salary level is low and there is lack of qualified professionals. (Differences are significant according to an ANOVA (p = .001) with North < East (p < .001); North < Central (p = .019); and South < East (p = .024).)

Region	Group 6: Lack of Qualified Professionals
Central	5.6
East	6.3
North	4.5
South	5.2
Total	5.5

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5.3. Psychological barriers

Group 7: Attitudes toward PwD

Q: To what extent do you agree that persons with disabilities do not need assistive technology because: *(1 = strongly disagree. 7 = strongly agree)*

- they are not capable of using it
- they are doing fine without it
- they have found other ways to cope with their daily needs and activities
- they have mastered some skills that are not mastered by people without disabilities
- being disabled in one modality makes you develop your skills in different modalities

Table 32. Average of the attitudes towards PwD. Ratings are made on a 7-point scale (*1 = strongly disagree. 7 = strongly agree).* Higher ratings mean more negative attitudes. (Differences are significant according to an ANOVA (p = .009); South > Central (p = .043); South > East (p = .008); South > North (p = .001).)

Region	Group 7: Attitudes toward PwD Barriers
Central	2.5
East	2.2
North	1.9
South	3.3
Total	2.4

Group 8: Motivational barriers

Q: To what extent do you agree that: *(1 = strongly disagree. 7 = strongly agree)*

- using AT by professionals working in Social Service Providers demands more time than they can spend
- using AT by professionals working in Social Service Providers demands more effort than they can spend
- professionals working in Social Service Providers don't like working with technology in general

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Table 33. Average of ratings about motivation of professionals. Ratings are made on a 7-point scale (*1 = strongly disagree. 7 = strongly agree).* Higher ratings mean higher motivational barriers. (Differences are not significant according to an ANOVA)

Region	Group 8: Motivational Barriers
Central	3.3
East	3.2
North	3.6
South	3.1
Total	3.3

Group 9: Attitudes towards technology

Table 34. Average of ratings about technology as a threat. Ratings are made on a 7-point scale (*1 = strongly disagree. 7 = strongly agree).* Higher ratings mean higher agreement that technology is a threat.

Region	Group 9: Attitudes towards Technology Barriers
Central	1.5
East	1.8
North	2.1
South	2.1
Total	1.7

Group 9.1.: Technology as a threat to PwD

Q: To what extent do you agree that using computers and tablets (iPads) by persons with disabilities: *(1 = strongly disagree. 7 = strongly agree)*

- threatens their privacy
- diminishes social contacts
- will not help in their daily life

Q: To what extent do you agree that using telecare (technology for remote monitoring) by persons with disability: *(1 = strongly disagree. 7 = strongly agree)*

- threatens their privacy
- diminishes social contacts
- will not help in their daily life

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Table 35. Average of ratings about technology as a threat to PwD. Ratings are made on a 7-point scale (*1 = strongly disagree. 7 = strongly agree).* Higher ratings mean higher agreement that technology is a threat to PwD. (Differences are not significant according to an ANOVA**.**)

Region	Group 9.1: Technology as a threat to PwD
Central	1.4
East	1.6
North	1.9
South	2.0
Total	1.7

Group 9.2.: Technology as a threat to jobs in the Social Sector

Q: To what extent do you agree that: *(1 = strongly disagree. 7 = strongly agree)*

- using technology is a threat to some jobs in the social sector
- using technology will create new jobs in the social sector*

Table 36. Average of ratings about technology as a threat to jobs in the Social Sector. Ratings are made on a 7-point scale (*1 = strongly disagree. 7 = strongly agree).* Higher ratings mean higher agreement that technology is a threat to jobs in the social sector. (Differences are not significant according to an ANOVA.)

Region	Group 9.2: Technology as a threat to jobs
Central	2.4
East	2.4
North	2.5
South	2.4
Total	2.4

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5.4. Policy barriers

Group 10: Legislative and regulatory barriers

Q: To what extent do you agree with the following statements: *(1 = strongly disagree. 7 = strongly agree)*

- The application process for assistive technology for Social Service providers is clear and well regulated*
- The application process for assistive technology for Social Service providers is long and difficult
- The application process for assistive technology for persons with disabilities is clear and well regulated*
- The application process for assistive technology for persons with disabilities is long and difficult

Table 37. Average of ratings about legislative and regulatory barriers to AT. Ratings are made on a 7-point scale (*1 = strongly disagree. 7 = strongly agree).* Higher ratings mean stronger legislative and regulatory barriers to AT. (Differences are not significant according to an ANOVA.)

Region	Group 10: Legislative and Regulatory Barriers
Central	4.6
East	5.1
North	4.5
South	4.8
Total	4.7

Group 11: Financial barriers

Q: There is enough funding for assistive technology for social service providers*. *(1 = strongly disagree. 7 = strongly agree)*
Q: There is enough funding for assistive technology for persons with disabilities*. *(1 = strongly disagree. 7 = strongly agree)*

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Table 38. Average of ratings about financial barriers to AT. Ratings are made on a 7-point scale (*1 = strongly disagree. 7 = strongly agree).* Higher ratings mean stronger financial barriers to AT. (Differences are significant according to an ANOVA ($p < .001$); North < Central and East ($p < .001$); South < Central and East ($p < .036$).)

Region	Group 10: Financial Barriers
Central	6.4
East	6.2
North	4.5
South	5.3
Total	5.7

5.5. Environment & Technology

Group 12: Environmental Barriers

Q: To what extent do you agree that: *(1 = strongly disagree. 7 = strongly agree)*

- Physical environment is not adapted to assistive technology (e.g. some places are not accessible)
- Environment is not adapted to high-tech assistive technology (e.g. there is no internet access or it is not stable)
- Physical environment is not adapted to assistive technology (e.g. homes are not adapted to high-tech AT)
- Social environment is not adapted to assistive technology (e.g. there are no communication partners)

Table 39. Average of ratings about environmental barriers to AT. Ratings are made on a 7-point scale (*1 = strongly disagree. 7 = strongly agree).* Higher ratings mean stronger environmental barriers to AT. (Differences are not significant according to an ANOVA.)

Region	Group 12: Environmental Barriers
Central	5.2
East	4.5
North	4.8
South	4.9
Total	4.8

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Group 13: Technology barriers

Q: To what extent do you agree with the following statements: *(1 = strongly disagree. 7 = strongly agree)*

- assistive technology is easy to use *
- using assistive technology requires a lot of computer skills
- using assistive technology requires a lot of learning
- assistive technology has all the features and functionalities needed by persons with disabilities*
- mainstream technology is not designed to be used by persons with disabilities

Table 40. Average of ratings about technological barriers (mainstream and AT). Ratings are made on a 7-point scale (*1 = strongly disagree. 7 = strongly agree).* Higher ratings mean stronger technological barriers. (Differences are not significant according to an ANOVA.)

Region	Group 13: Technology Barriers
Central	3.4
East	3.6
North	3.9
South	3.9
Total	3.7

5.6. Barriers related to persons with disabilities and their families

Group 14: PwD knowledge and skill barriers

Table 41. Average ratings on the questions assessing PwD's and their families and caregivers' knowledge and skills about AT. Ratings are made on a 7-point scale (*1 = strongly disagree. 7 = strongly agree).* Data is recoded so higher ratings mean stronger barriers related to PwD knowledge and skills.

Region	Group 14: PwD Knowledge and Skills
Central	4.7
East	5.2
North	4.7
South	5.3
Total	5.0

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Group 14.1.: PwD knowledge and skill barriers

Q: To what extent do you agree that **persons with disabilities** have the following knowledge and skills: *(1 = strongly disagree. 7 = strongly agree)*

- Knowledge about the existing assistive technology (mainstream or specialized) *
- Knowledge about the benefits of using assistive technology *
- Knowledge in using assistive technology *
- Technology skills to use assistive technology *
- Computer skills to use assistive technology *
- Enough training in using assistive technology *

Table 42. Average ratings on the questions assessing PwD's knowledge and skills about AT. Ratings are made on a 7-point scale (*1 = strongly disagree. 7 = strongly agree).* Data is recoded so higher ratings mean stronger barriers related to PwD knowledge and skills. (Differences are significant according to an ANOVA(p = .001); North < East and South (p < .011); Central < East and South (p < .004).)

Region	Group 14.1: PwD Knowledge and Skills
Central	4.5
East	5.4
North	4.6
South	5.6
Total	5.0

Q: What percentage of persons with disabilities that you know have good knowledge in assistive technology? *(Please, enter a number between 0 and 100)*

Table 43. Average percentage of PwD with good knowledge in AT. (Differences are not significant according to an ANOVA.)

Region	Group 14.1: Percentage of PwD with good knowledge in AT
Central	25.1%
East	19.2%
North	26.7%
South	13.1%
Total	21.4%

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Group 14.2.: PwD families and caregivers' knowledge and skill barriers

Q: To what extent do you agree that **families and caregivers** of persons with disabilities have the following knowledge and skills: *(1 = strongly disagree. 7 = strongly agree)*

- Knowledge about the existing assistive technology (mainstream or specialized) *
- Knowledge about the benefits of using assistive technology *
- Knowledge in using assistive technology *
- Technology skills to use assistive technology *
- Computer skills to use assistive technology *
- Enough training in using assistive technology *

Table 44. Average ratings on the questions assessing PwD families and caregivers' knowledge and skills about AT. Ratings are made on a 7-point scale (*1 = strongly disagree. 7 = strongly agree).* Data is recoded so higher ratings mean stronger barriers related to PwD famlilies and caregivers knowledge and skills. (Differences are not significant according to an ANOVA.)

Region	Group 14.2: Pwd families and caregivers' knowledge and skills
Central	4.8
East	5.1
North	4.7
South	4.9
Total	4.9

Q: What percentage of **families and caregivers** of persons with disabilities that you know have good knowledge in assistive technology? *(Please. enter a number between 0 and 100)*

Table 45. Average percentage of families and caregivers of PwD with good knowledge in AT. Ratings are made on a 7-point scale (*1 = strongly disagree. 7 = strongly agree).* (Differences are not significant according to an ANOVA.)

Region	Percentage of families and caregivers with good knowledge in AT
Central	21.0
East	18.7
North	26.3
South	13.8
Total	20.2

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Group 15: PwD psychological barriers

Q: To what extent do you agree with the following statements about persons with disabilities and their **families and caregivers**:

- Persons with disabilities don't like technology in general
- Families of persons with disabilities don't like working with technology in general
- Using assistive technology requires by families of persons with disabilities more time than they can spend
- Using assistive technology requires by families of persons with disabilities more effort than they can spend

Q: To what extent do you think that **persons with disabilities and their families** would agree that persons with disability do not need assistive technology because:

- they are not capable of using it
- they are doing fine without it
- have mastered some skills that are not mastered by people without disabilities
- being disabled in one modality makes you develop your skills in different modalities
- they have found other ways to cope with the daily needs and activities
- using assistive technology makes the person looks strange for the other people
- using assistive technology makes the person looks different from the others

Table 46. Average of ratings about PwD psychological barriers. Ratings are made on a 7-point scale (*1 = strongly disagree. 7 = strongly agree).* Higher ratings mean stronger PwD psychological barriers. (Differences are significant according to an ANOVA (p = .005); South < Central and East (p < .003).)

Region	Group 15: PwD Psychological Barriers
Central	2.7
East	2.7
North	3.2
South	3.8
Total	3.0

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6. APENDIX 1: INFORMED CONSENT AND INTRODUCTION

6.1. Informed consent

You are being invited to participate in a survey for professionals working in Social Service Providers for Persons with Disabilities.

This survey covers several European countries and is carried out by ASSIST – Assistive Technology (www.assistfoundation.eu) for the European Association of Service providers for Persons with Disabilities (www.easpd.eu).

If you agree to take part in this study. you will be asked to complete an online questionnaire asking about your opinion on several matters related to Assistive technology usage. It will take you approximately 15 minutes to complete the survey.

Participation is completely voluntary and you can withdraw at any time. Your answers are collected anonymously and they will remain confidential.

If you have questions about this project. please. contact prof. Maurice Grinberg at assist.foundation.bg@gmail.com

Your participation in the study would be highly appreciated. Completing the questionnaire. you would contribute to our efforts to improve the quality of life of persons with disabilities.

By clicking the button below you indicate that you agree to participate in this study.

6.2. Introduction

In the questionnaire, we are interested in **Assistive Technology** - technology based solutions that promote quality of life of the service users.

Please. read carefully the following explanation before continuing with the questionnaire!

Assistive Technology is **any product or technology-based service or solution** that enables people with activity limitations of all ages (children. adults or elderly) in their:

- daily lives
- work

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- education
- leisure
- independence

Assistive Technology is **any** technology – specialized or mainstream - that can be personal equipment for:

- mobility
- communication
- social connectedness
- access to digital environments
- technology for safety. telecare. remote monitoring

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DELIVERABLE 5

Potential Barriers to the Uptake of PCT -Results from the Questionnaire

1. CONTENTS

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2. INTRODUCTION

The aim of the study "Barriers to the wider deployment of person centred technology in services for persons with disabilities," commissioned by EASPD, was to identify what are the principle barriers and what are the potential facilitating factors that would enable the uptake of PCT in the social sector.

The results of the project are organized in four parts (corresponding to the first four deliverables of the project):

- Literature review and identification of the barriers to PCT concerning all stakeholders, e.g. PwD, policy makers, SPPD professionals, etc. (D1)
- Analysis and grouping of the barriers identified in D1, focussing on SPPD (D2).
- Design of a questionnaire based on D2 which includes questions covering the main groups identified in D2 some additional barriers which came about after expert analysis and discussion (D3)
- The results from the questionnaire for each question are analysed and presented (D4).

This deliverable aims at summarising the results obtained in the project and at presenting them in a format which will be most usable for all stakeholders related to SPPD – policy makers, commissioners, SPPD managers and professionals – in their efforts to overcome the existing barriers to PCT and help them to efficiently improve the existing situation.

This deliverable, based on the goals of the project, singles out the main barriers as perceived by SPPD professionals and puts forward approaches and specific steps to their overcoming.

The deliverable is organized as follows. First, the general information about the respondents is provided with general statistics about the acquaintance and usage of PCT. Then, six groups of barriers are presented with summarized results, analysis, discussion, and conclusions.

In Section "Results Summary for All Perceived Barriers", summarized data is presented with ranking of the severity of the barriers identified and based on that suggestions about the facilitation of PCT usage in SPPD are put forward.

Throughout the deliverable, a colour code for the tables and the plots is used: blue for the results where more is better, and red where more is worse with respect to the severity of the barriers to PCT. It should be stressed that the results presented here reflect the personal judgments and evaluations of the participants and are not objective data and they are considered and analysed as such.

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2.1. Questionnaire: Participants and General Statistics

The questionnaire was translated in 8 languages of which only 5 were used by the respondents.

The questionnaire in eight languages is on-line and can be used for further research on this very important topic.

A total of 137 participants filled-in the questionnaire. The participants were from 18 European countries. 100 participants were included in the subsequent statistics and analysis.

These 100 respondents were grouped in four groups called North, Central, East, and South groups presented in Table 47. Overall, the participation in the study could have been much more massive, but nevertheless the number of respondents for various countries is reasonably representative.

Table 47. Number of participants that are included in the analysis by geographical region.

Region	Number of Participants by Country	Total
Central	Hungary-26, Croatia-1, Poland-1	28
East	Bulgaria-28, Latvia-1, Romania-1	30
North	UK-9, Germany-4, France-3, Austria-2, Norway-2, Sweden-2, Denmark-1, Finland-1, Netherlands-1	25
South	Spain-11, Greece-5, Italy-1	17
Total		100

2.2. PCT Usage across Europe

The following data presents the evaluation of PCT usage across Europe according to the respondents.

The average ratings of technology as a help to PwD (see Table 48), shows a high level of unanimity in the various European regions (mean rating of 6.4).

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Table 48. Average ratings of technology as a help to PwD. Ratings are made on a 7-point scale (from *1 = strongly disagree* to *7 = strongly agree).* Higher ratings mean more positive attitude towards technology as a help to PwD.

Region	Technology as Help
Central	6.5
East	6.3
North	6.6
South	6.1
Total	6.4

However, the results given in Table 49 about the usage of PCT by SPPD professionals in their daily work, are evidence of the existing barriers investigated here. The average is already alarming – 36%, but the differences across regions show a real problem to be solved by the Central, East and the South regions. In the North of Europe 78% use PCT, but the average for the other regions is below 25%.

Table 49. Average percentage of staff members of the SPPD using assistive technology in their work with service users.

Region	Percentage of staff members
Central	6.5
East	6.3
North	6.6
South	6.1
Total	6.4

The average ratings of the good use of PCT in SPPD (Table 50) again show a large discrepancy between the North and the other regions with 5.8 for the former and 4.5 for Central, 3.4 for East, and 3.6 for South Europe. It should be noted that in Central Europe the rating of good use is relatively high compared to the lowest percentage of use of PCT.

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Table 50. Average rating of good use of assistive technology in SPPD. Ratings are made on a 7-point scale (from *1 = strongly disagree* to *7 = strongly agree*).

Region	Average of good use of assistive technology in SSPD
Central	4.5
East	3.4
North	5.8
South	3.6
Total	4.3

The data in Table 51 reflects the previous results – the estimated average of 50% of PCT experts is much higher than the average of about 12% in the other regions.

Table 51. Average percentage of experts in PCT in SSPD.

Region	Percentage of experts in AT
Central	11%
East	15%
North	50%
South	10%
Total	22%

3. Main Groups of Barriers to PCT

In what follows, we will consider the main groups of barriers as obtained based on the preliminary identified groups of barriers to PCT and on the subsequent analysis of the result form the questionnaire. For each main group, the description of the groups included will be given and the relevant results from the questionnaire (the questionnaire was designed based on the groups identified in the theoretical analysis; see D3).

3.1. Knowledge, Skill, and Training Barriers

One major type of potential barriers to the uptake of PCT is related to knowledge, skills, and training of the professionals working with people with disabilities.

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Group 1. Knowledge and awareness barriers

The barriers in this group are related to the lack of knowledge and awareness about the existing PCT. This group of barriers is also related to the training barriers (see Group 3) (formal education, refresher courses, or later training) – deficiency or ineffectiveness of education or of the system of refresher courses which are expected to make the professionals in SPPD aware of the available PCT and the benefits from them. Sometimes partial knowledge of PCT and some of their characteristics may be available but be incomplete and insufficient for efficient PCT deployment. These barriers include lack of knowledge:

- About the existing AT (mainstream or specialized)
- About the benefits of using AT for persons with disabilities
- In using AT when working with PwD
- In using AT for assessment and solution identification
- In AT installation and management

Group 2. Skill barriers

This group of barriers can in principal be combined with the Group 1 (knowledge about PCT) but it is kept separate and even when there is knowledge about PCT, its effective and efficient usage is related to many practical skills, interventions and practices that require hands-on training.

These barriers include lack of:

- Technology skills to use assistive technology
- Computer skills to use assistive technology
- Intervention skills to use assistive technology

Group 3. Training barriers

Professionals working with PwD do not have enough training courses about PCT – both during formal education or on-the-job trainings.

Those barriers include lack of:

- Courses in PCT during formal education
- Courses in PCT after professionals start working

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Questionnaire results

The average ratings (on a scale from *1 = strongly disagree* to *7 = strongly agree*) for each group of barriers (Group 1. Knowledge and awareness, Group 2. Skills, and Group 3. Training) are presented in Table 52.

Table 52. Average ratings for all groups of potential Knowledge and Training Barriers. Ratings are made on a 7-point scale (from *1 = strongly disagree* to *7 = strongly agree).* Higher ratings mean stronger barriers.

Region	Group 1: knowledge Barriers	Group 2: Skill Barriers	Group 3: Training Barriers
Central	4.1	4.3	5.4
East	4.3	4.4	5.6
North	4.2	4.0	5.7
South	4.0	4.3	5.3
Total	4.2	4.2	5.5

The estimates of the respondents about the percentage of professionals with good knowledge in AT are presented in Table 53. The answers about the number of training courses during formal education and on the job are also presented in Table 53.

Table 53. Average percentage of professionals with good knowledge in AT. Average number of training courses in AT during formal education and on the job.

Region	Percentage of professionals with good knowledge in AT	Average number of training courses in AT during formal education	Average number of training courses in AT on the job
Central	38.0%	1.5	2.5
East	28.0%	0.5	2.4
North	32.3%	0.8	16.2
South	20.5%	0.5	1.4
Total	30.5%	0.9	5.8

The results indicate that participants don't perceive large Knowledge and Skill Barriers (average rating of 4.2; see column 2 and 3 of Table 52). At the same time, the percentage of professionals with good knowledge in AT is estimated to be only 30.5% on average (first column of Table 53.)

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Training barriers are perceived to be stronger (average rating of 5.5) than Knowledge and Skill barriers (4.2 and 4.2, respectively). This is consistent with the low average number of courses offered during formal education, which are less than 1 (see column 3 of Table 53.)

As can be seen in Figure 2 and Figure 3, many participants haven't had any training courses during their formal education or on-the-job. Most respondents (more than 70%) from the North group had training courses only after they started working.

Figure 2: Percentage of participants for corresponding number of training courses in AT during formal education.

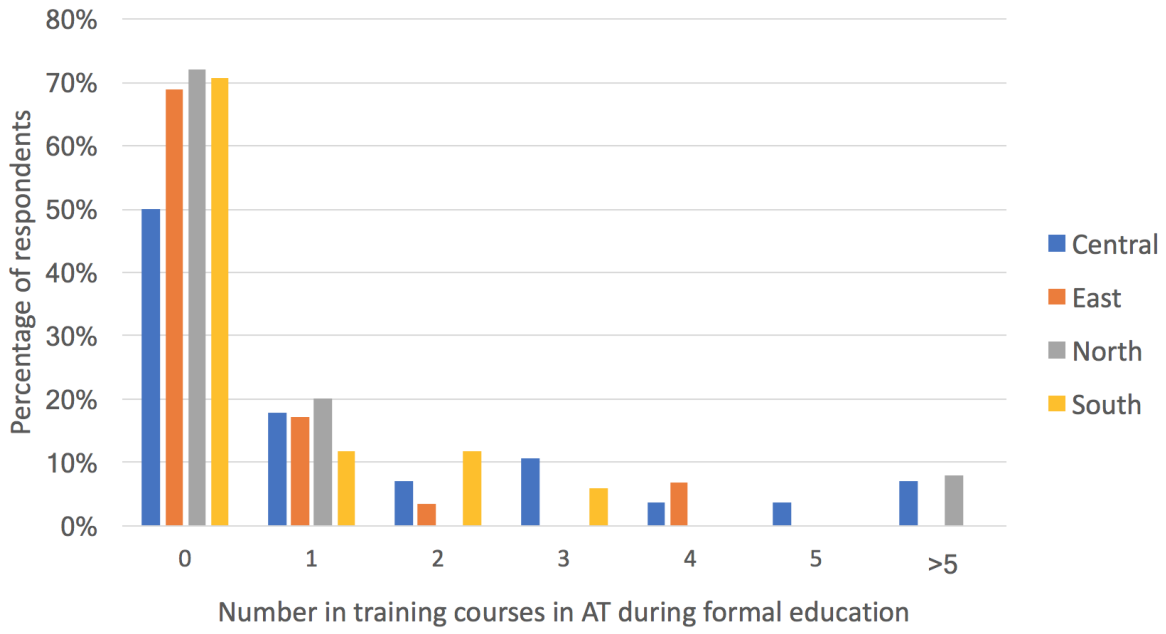
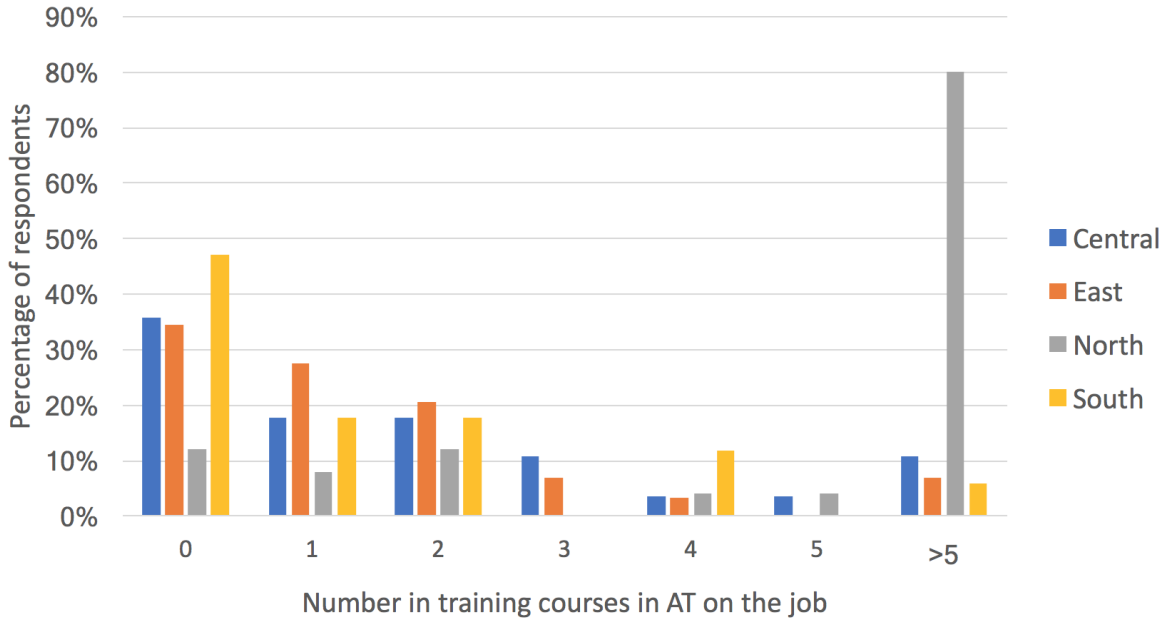


Figure 3: Percentage of participants for corresponding number of training courses in AT on the job.



3.2. SPPD organizational Barriers

Group 4. Practice barriers

The barriers from this group are related to existing long-term practices that are not based on official regulations or legislation (although in some cases it may seem so) but are adopted as formal or informal rules by SPPD, commissioners, or by other institutions (e.g. educational).

The potential barriers are:

- The management of the SPPD is not willing to spend budget on PCT
- The management of the SPPD prefers standard services at the expense of PCT based services
- The management of the SPPD is not willing to re-organize it to use more PCT
- Commissioners lack knowledge about the existing PCT (mainstream or specialized)
- Commissioners lack knowledge about the benefits of using PCT for PwD

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Group 5. Resource barriers

In some cases, SPPDs lack resources or have limitations on personnel, time, and infrastructure related to PCT due to insufficient income or funding.

Region	Group 4: Practice Barriers	Group 5: Resource Barriers	Group 6: Qualified Professionals Barriers
Central	4.6	5.2	5.6
East	4.2	5.1	6.3
North	4.1	4.9	4.5
South	3.8	5.0	5.2
Total	4.2	5.1	5.5

These potential barriers include lack of:

- Personnel
- Time
- Infrastructure
- Budget

Group 6. Qualified professionals' barriers

Some barriers are related to difficulties in recruitment and retaining of qualified professionals (in many cases – due to the low salary level in the social sector).

These potential barriers include:

- Low salary level in the social sector
- Difficulties in recruitment of qualified professionals
- Difficulties in retaining qualified professionals

Questionnaire results

The average ratings (on a scale from *1 = strongly disagree* to *7 = strongly agree*) for each group of barriers (Group 4. Practice barriers, Group 5. Resource barriers, and Group 6. Qualified professionals' barriers) are presented in Table 54.

Table 54. Average ratings for all groups of potential SSPD organizational barriers. Ratings are made on a 7-point scale (from *1 = strongly disagree* to *7 = strongly agree).* Higher ratings mean stronger barriers.

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Region	Group 4: Practice Barriers	Group 5: Resource Barriers	Group 6: Qualified Professionals Barriers
Central	4.6	5.2	5.6
East	4.2	5.1	6.3
North	4.1	4.9	4.5
South	3.8	5.0	5.2
Total	4.2	5.1	5.5

Group 5 Resource Barriers (average rating 5.1) and especially Group 6. Qualified professionals Barriers (average rating 5.5) are perceived as relatively strong barriers to the use of PCT.

3.3. Psychological Barriers

Some of the potential barriers to PCT identified in the literature review are the psychological barriers which are related to the SPPD professionals' attitudes towards PwD and technology and their motivation to use PCT.

Group 7. Attitude towards PwD barriers

This group includes barriers related to attitudes towards PwD and beliefs about their capabilities. Some of the negative beliefs are that PwD do not need PCT because:

- They are not capable of using it
- They are doing fine without it
- They have found other ways to cope with their daily needs and activities
- They have mastered some skills that are not mastered by people without disabilities
- Being disabled in one modality makes you develop your skills in different modalities

Group 8. Motivational barriers

This group of barriers is related to the lack of motivation in professionals to use technology in their work with PwD. SPPD and the professionals working there are not motivated to use PCT as it requires more time or/and efforts, including for acquiring additional competencies.

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These potential barriers include the following:

- Using AT by professionals working in SSP demands more time than they can spend
- using AT by professionals working in SSP demands more effort than they can spend
- professionals working in SSP don't like working with technology in general

Group 9. Attitudes towards technology

The negative attitudes of professionals toward technology in general and AT in particular is an important factor for the adoption and usag of PCT.

The potential barriers in this group are related to the perception of technology (PCT, computers, tablets, telecare etc.) to:

- Threaten the privacy of the users
- Limit the social contacts of PwD
- Provide no real help in the daily life of PwD
- Be a threat to some jobs in the social sector

Questionnaire results

The average ratings (on a scale from *1 = strongly disagree* to *7 = strongly agree*) for each group of potential Psychological Barriers (Group 7. Attitude towards PwD barriers, Group 8. Motivational barriers, and Group 9. Attitudes towards technology barriers) are presented in Table 55.

Table 55. Average ratings for all groups of potential Psychological Barriers. Ratings are made on a 7-point scale (from *1 = strongly disagree* to *7 = strongly agree).* Higher ratings mean stronger barriers.

Region	Group 4: Practice Barriers	Group 5: Resource Barriers	Group 6: Qualified Professionals Barriers
Central	2.5	3.3	1.5
East	2.2	3.2	1.8
North	1.9	3.6	2.1
South	3.3	3.1	2.1
Total	2.4	3.3	1.7

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The low ratings seen in Table 55 seem to indicate that the barriers from this group are not considered very important by the participants in the survey.

3.4. Policy Barriers

Group 10. Legislative and regulatory barriers

Legislative and regulatory decisions that affect PwD and SPPD are also identified as potential barriers. Specific laws, regulations, and rules that settle legally everything related to PCT from lists of devices, which are identified as needed by PwD, to services involving PCT. They are related to regulations for acquiring PCT by SPPD and by PwD.

Specific potential barriers included in the study are:

- Long and difficult application process for AT for SPPD
- Long and difficult application process for AT for PwD

Group 11. Financial barriers

The financial barriers can be related to funding, maintenance, and replacement of PCT but also to the financial capability of a SPPD to purchase PCT, including commissioning.

The potential barriers considered are:

- Not enough funding for AT for SPPD
- Not enough funding for AT for PwD

Questionnaire results

The average ratings (on a scale from *1 = strongly disagree* to *7 = strongly agree*) for each group of potential Policy Barriers (Group 10 Legislative and regulatory Barriers and Group 11. Financial Barriers) are presented in Table 56.

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Table 56. Average ratings for all groups of potential Policy Barriers. Ratings are made on a 7-point scale (from *1 = strongly disagree to 7 = strongly agree).* Higher ratings mean stronger barriers.

Region	Group 10: Legislative and Regulatory Barriers	Group 11: Financial Barriers
Central	4.6	6.4
East	5.1	6.2
North	4.5	4.5
South	4.8	5.3
Total	4.7	5.7

As seen from Table 56, the Policy Barriers are rated as strong barriers, especially the Financial Barriers (average rating of 5.7). This is especially true for the Central and East European countries.

3.5. Environment & Technology

Group 12. Environmental barriers

Potential barriers to PCT depend very much on the environment in which it is used. Even when PCT is available, it may not be used for various reasons related to the environment or/and to the available support technology.

Potential barriers of this group considered in the study could be:

- The physical environment is not adapted to PCT (e.g. some locations are not accessible)
- The environment is not adapted to high-tech PCT (e.g. there is no access to Internet or the connection is unstable)
- The social environment is not adapted to AT (e.g. there are no communication partners)

Group 13. Technology barriers

The barriers in this group can be due to the lack of features, usability or advanced ICT skills when required. For instance, lack of some features in specialized PCT, lack of inclusive design

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in mainstream technology, complexity of high-tech PCT requiring ICT skills, or lack of usability. The specific barriers included in the study are:

- PCT is hard to use
- Using PCT requires a lot of computer skills
- Using AT requires a lot of learning
- PCT has not all the features and functionalities needed by PwD
- Mainstream technology is not designed to be used by PwD

Questionnaire results

The average ratings (on a scale from *1 = strongly disagree* to *7 = strongly agree*) for each group of barriers (Group 12. Environmental Barriers and Group 13. Technology Barriers) are presented in Table 57. The results indicate that Environmental Barriers are perceived as strong barriers (average rating of 4.8), while Technology Barriers are not rated so high (average rating of 3.7).

Table 57. Average of ratings for all groups of potential Environment and Technology Barriers. Ratings are made on a 7-point scale (from *1 = strongly disagree* to *7 = strongly agree).* Higher ratings mean stronger barriers.

Region	Group 12: Environmental Barriers	Group 13: Technology Barriers
Central	5.2	3.4
East	4.5	3.6
North	4.8	3.9
South	4.9	3.9
Total	4.8	3.7

3.6. Barriers Related to PwD and their Families

The potential barriers related to PwD and their families can be also barriers to PCT for SPPD as if the final users don't want to use the technology, SPPD will not offer it. In what follows, the most common barriers to PwD are given.

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Group 14. PwD knowledge and skill barriers

The lack of knowledge and skills of PwD can be barriers to the usage of PCT some of which could be formulated as follows:

- Lack of knowledge about the existing PCT (mainstream or specialized)
- Lack of knowledge about the benefits of using PCT
- Lack of knowledge in using PCT
- Lack of technology skills to use PCT
- Lack of computer skills to use PCT
- Lack of training in using PCT

Group 15. PwD psychological barriers

Another group of potential barriers are the negative attitudes and lack of motivation of PwD and their families with respect to PCT.

The potential barriers included in the questionnaire are:

- PwD and their families don't like technology in general
- Using PCT requires more time than the families of PwD can spend
- Using PCT requires more efforts than the families of PwD can do

PwD and their families might also think that

- PwD are not capable of using PCT
- PwD are doing fine without PCT
- PwD have mastered some skills that are not mastered by people without disabilities
- Being disabled in one modality makes you develop your skills in different modalities
- PwD have found other ways to cope with the daily needs and activities
- Using AT makes PwD look strange for the other people
- Using AT makes PwD look different from the others

Questionnaire results

The average ratings (on a scale from *1 = strongly disagree* to *7 = strongly agree*) for each group of barriers related to PwD and their families (Group 14 and 15, see above) are presented in Table 58.

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The estimates of the respondents about the percentage of PwD and the percentage of families and caregivers with good knowledge in PCT are presented in Table 59.

Table 58. Average ratings for all groups of potential Barriers related to PwD and their families. Ratings are made on a 7-point scale (from *1 = strongly disagree* to *7 = strongly agree*). Higher ratings mean stronger barriers.

Region	Group 14: PwD and Families' Knowledge and Skills Barriers	Group 15: PwD Psychological Barriers
Central	4.7	2.7
East	5.2	2.7
North	4.7	3.2
South	5.3	3.8
Total	5.0	3.0

Table 59. Average percentage of families and caregivers of PwD with good knowledge in AT.

Region	Percentage of PwD with Good Knowledge in AT	Percentage of Families and Caregivers with Good Knowledge in AT
Central	25.1%	21.0%
East	19.2%	18.7%
North	26.7%	26.3%
South	13.1%	13.8%
Total	21.4%	20.2%

The results indicate that PwD and their families' Knowledge and Skill Barriers are rated to be relatively strong (average rating of 5.0). It is judged that only about 20% of PwD or their families have good knowledge in AT.

However, PwD Psychological Barriers are rated to be weak (average 3.0).

4. Result Summary for All Perceived Barriers

The generalized results from the questionnaire presented in the previous sections, for all groups of perceived barriers, are summarized in Table 60 for Central, East, North and South Europe.

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Table 60. Average ratings for all groups of barriers. Ratings are made on a 7-point scale (from *1 = strongly disagree* to *7 = strongly agree*). Higher ratings mean stronger barriers.

Barriers	Central	East	North	South	Total
Group 1: Knowledge Barriers	4.1	4.3	4.2	4	4.2
Group 2: Skill Barriers	4.3	4.4	4	4.3	4.2
Group 3: Training Barriers	5.4	5.6	5.7	5.3	5.5
Group 4: Practice Barriers	4.6	4.2	4.1	3.8	4.2
Group 5: Resource Barriers	5.2	5.1	4.9	5	5.1
Group 6: Qualified Professionals	5.6	6.3	4.5	5.2	5.5
Group 7: Attitudes toward PwD barriers	2.5	2.2	1.9	3.3	2.4
Group 8: Motivational Barriers	3.3	3.2	3.6	3.1	3.3
Group 9: Attitudes toward Technology Barriers	1.5	1.8	2.1	2.1	1.7
Group 10: Legislative and Regulatory Barriers	4.6	5.1	4.5	4.8	4.7
Group 11: Financial Barriers	6.4	6.2	4.5	5.3	5.7
Group 12: Environmental Barriers	5.2	4.5	4.8	4.9	4.8
Group 13: Technology Barriers	3.4	3.6	3.9	3.9	3.7
Group 14: PwD and Families' Knowledge and Skills Barriers	4.7	5.2	4.7	5.3	5.0
Group 15: PwD Psychological Barriers	2.7	2.7	3.2	3.8	3.0

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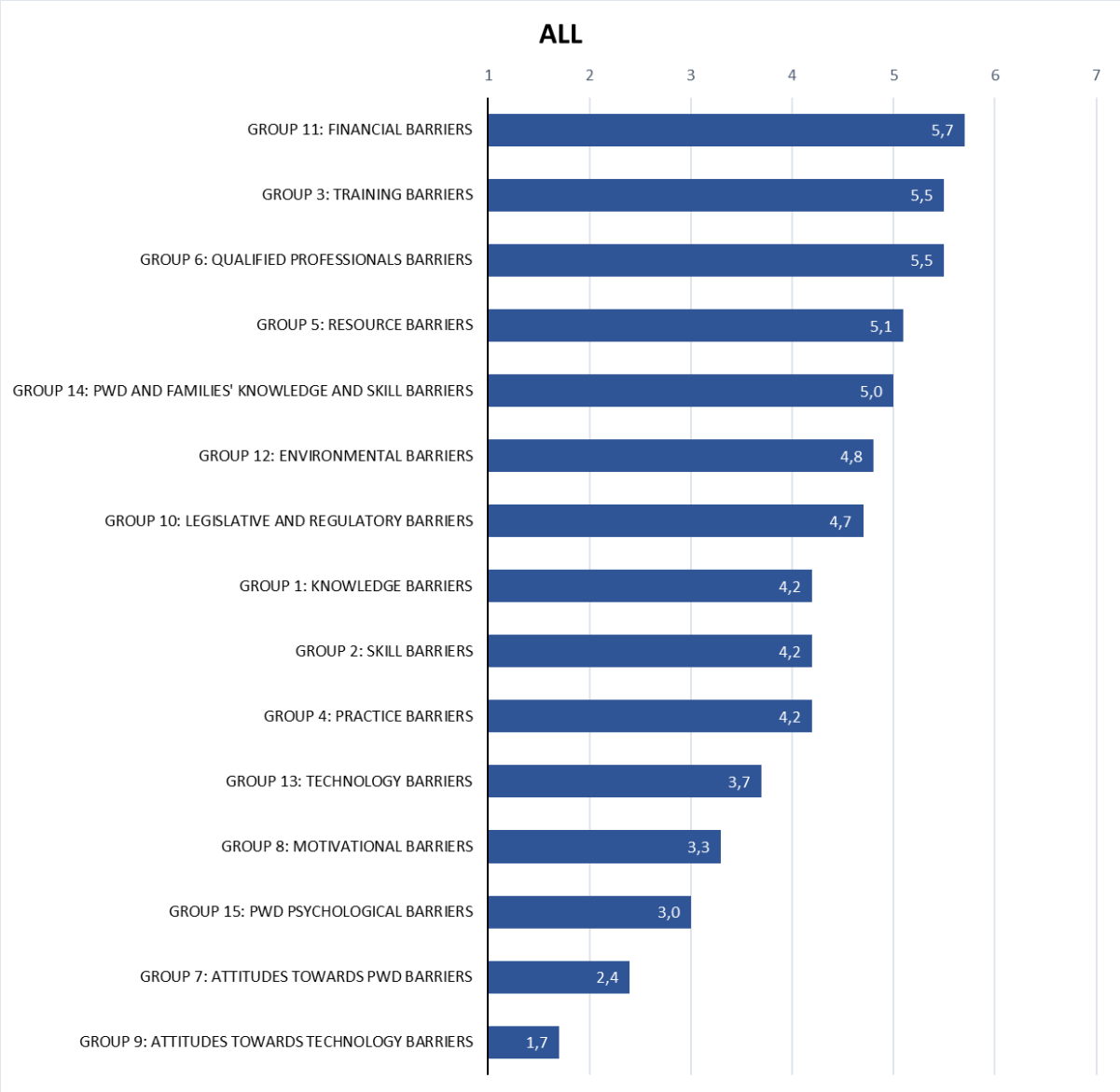
Figure 4 presents the barriers ordered from the most severe to the less severe, averaged over Europe regions.

Figure 4: Average ratings for all groups of barriers. Ratings are made on a 7-point scale (from *1 = strongly disagree* to *7 = strongly agree*). Higher ratings mean stronger barriers. Barriers are sorted from stronger to weaker.



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The barriers presented in Figure 4 were subjected to ANOVA analysis, and the post-hoc tests show the following ordering of groups of barriers with respect to their severity according to the ratings of the participants:

- Group 11: Financial Barriers, Group 3: Training Barriers, and Group 6: Qualified Professionals Barriers (average ratings between 5.5 and 5.7)
- Group 5: Resource Barriers, Group 10: Legislative and Regulatory Barriers, Group 12: Environmental Barriers, and Group 14: PwD Knowledge and Skill barriers (average ratings between 4.7 and 5.1)
- Group 1: Knowledge Barriers, Group 2: Skill Barriers, and Group 4: Practice Barriers (average rating of 4.2)
- Group 13: Technology Barriers (average rating of 3.7)
- Group 8: Motivational Barriers, and Group 15: PwD Psychological Barriers (average rating of 3.3 and 3.0)
- Group 7: Attitude towards PwD Barriers, and Group 9: Attitudes towards Technology Barriers (average rating of 2.4 and 1.7)

In Figure 5, the groups of barriers for each part of Europe are shown in one plot. The barriers are ordered according to the ordering illustrated in Figure 4 The differences among Central, East, North, and South are clearly seen.

Figure 6, Figure 7, Figure 8 and Figure 9 provide the same information as Figure 5 for each region.

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Figure 5: Average ratings for all groups of barriers for each of the regions (Central, East, North, South. Ratings are made on a 7-point scale (from *1 = strongly disagree* to *7 = strongly agree*). Higher ratings mean stronger barriers. Barriers are sorted from stronger to weaker.

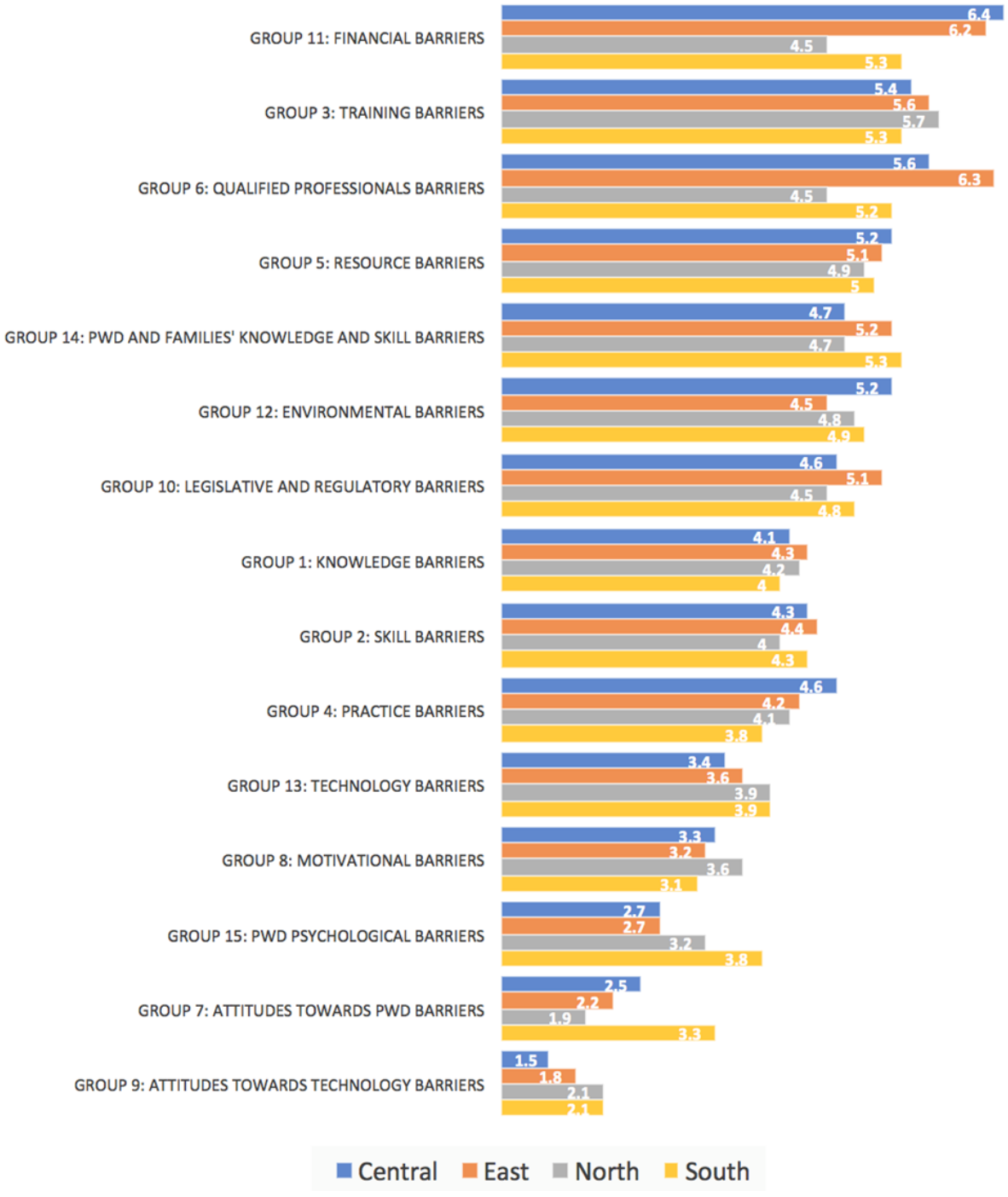

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Figure 6: Central region**:** average ratings for all groups of barriers. Ratings are made on a 7-point scale (from *1 = strongly disagree* to *7 = strongly agree*). Higher ratings mean stronger barriers. Barriers are sorted from stronger to weaker.

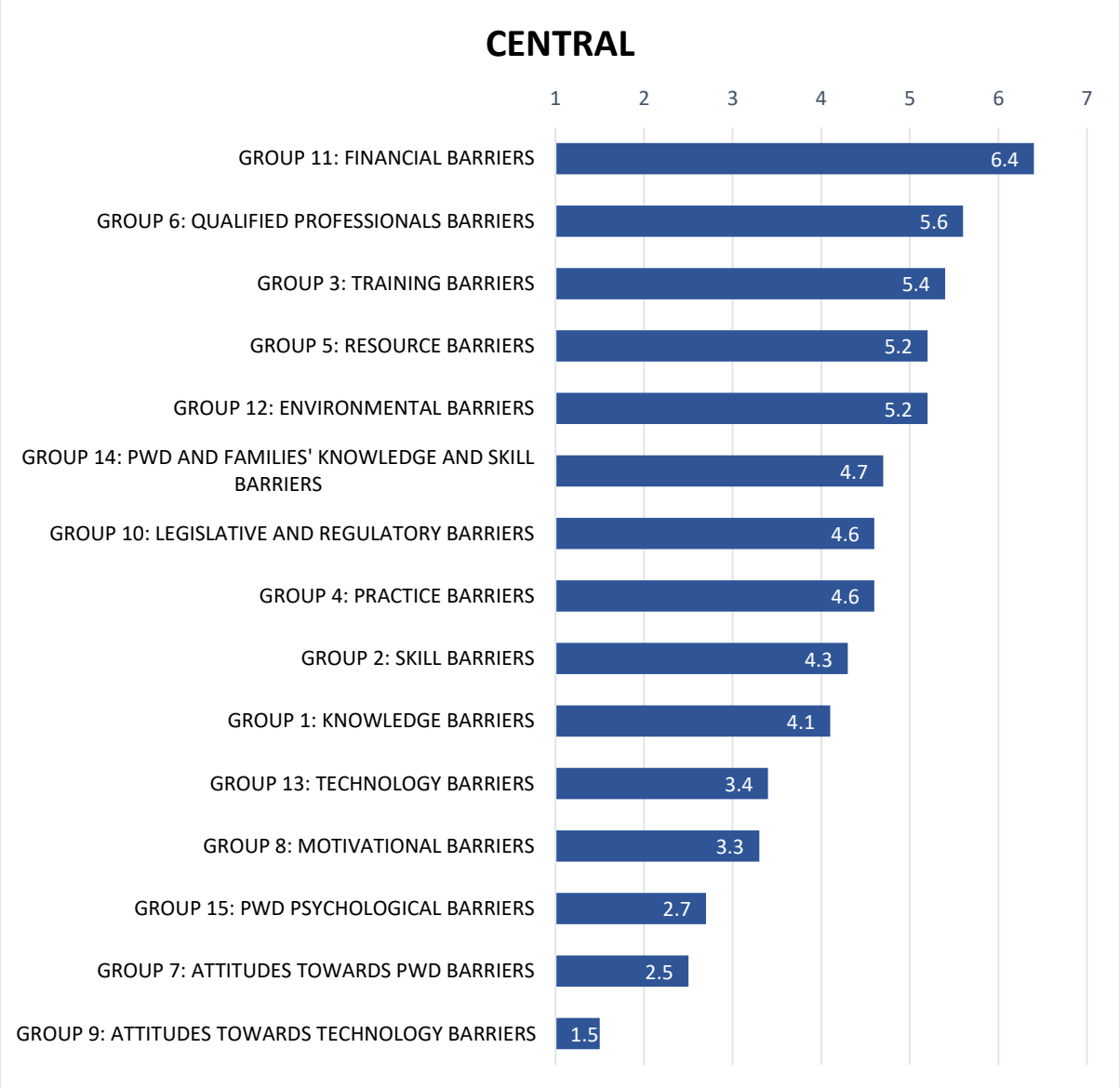

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Figure 7: East region**:** average ratings for all groups of barriers. Ratings are made on a 7-point scale (from *1 = strongly disagree* to *7 = strongly agree).* Higher ratings mean stronger barriers. Barriers are sorted from stronger to weaker.

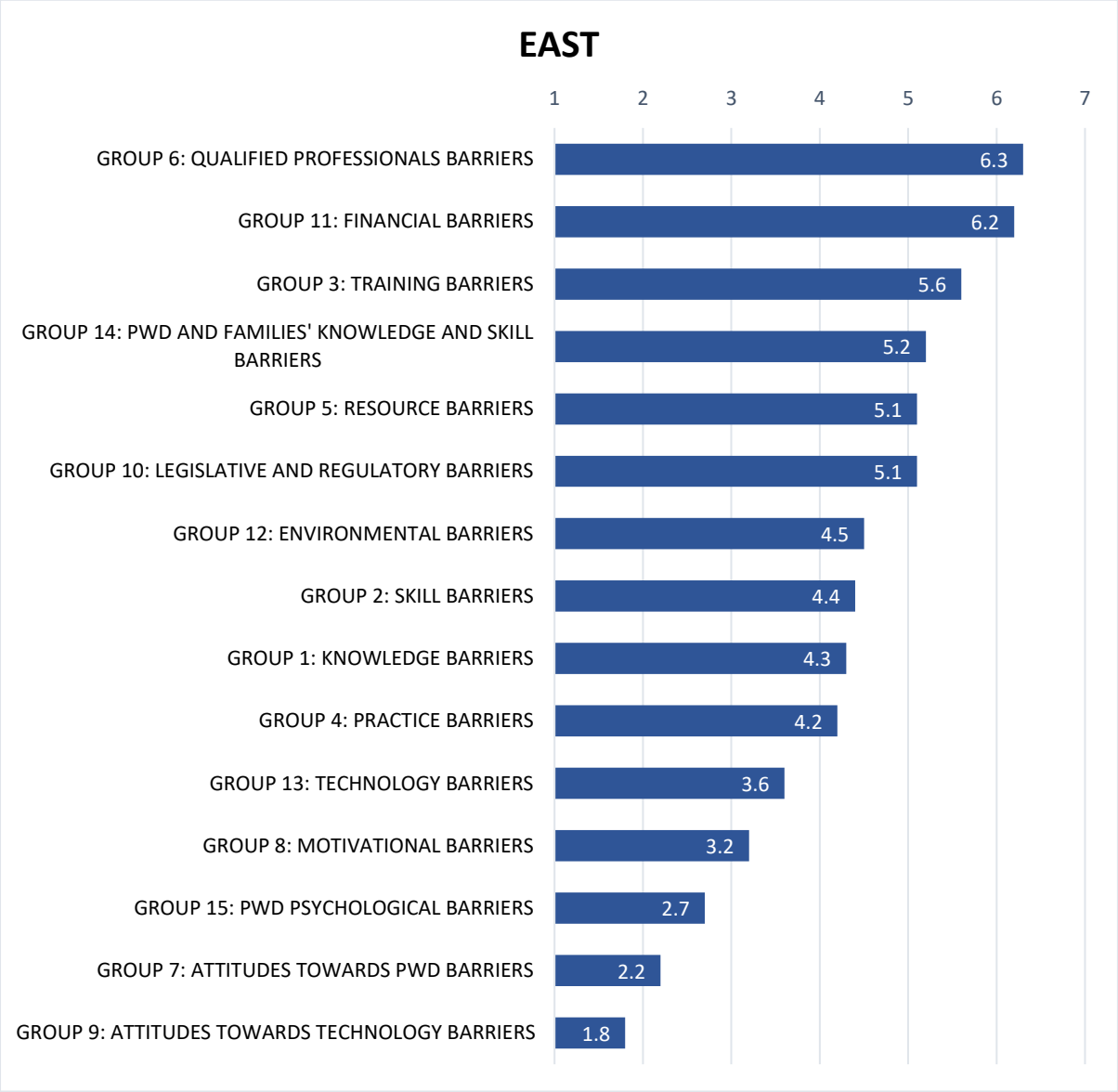

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Figure 8: North region**:** average ratings for all groups of barriers. Ratings are made on a 7-point scale (from *1 = strongly disagree* to *7 = strongly agree*). Higher ratings mean stronger barriers. Barriers are sorted from stronger to weaker.

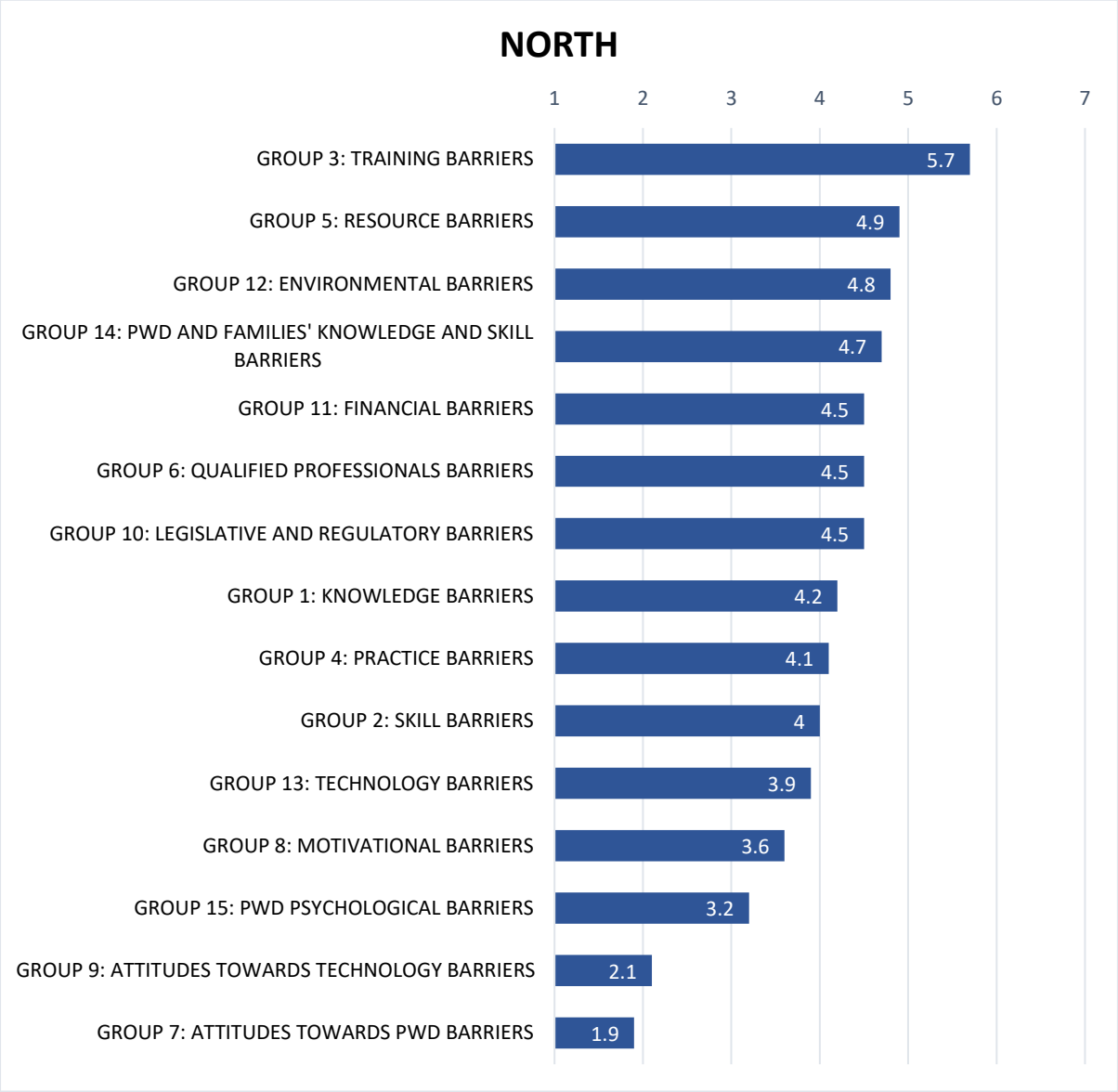

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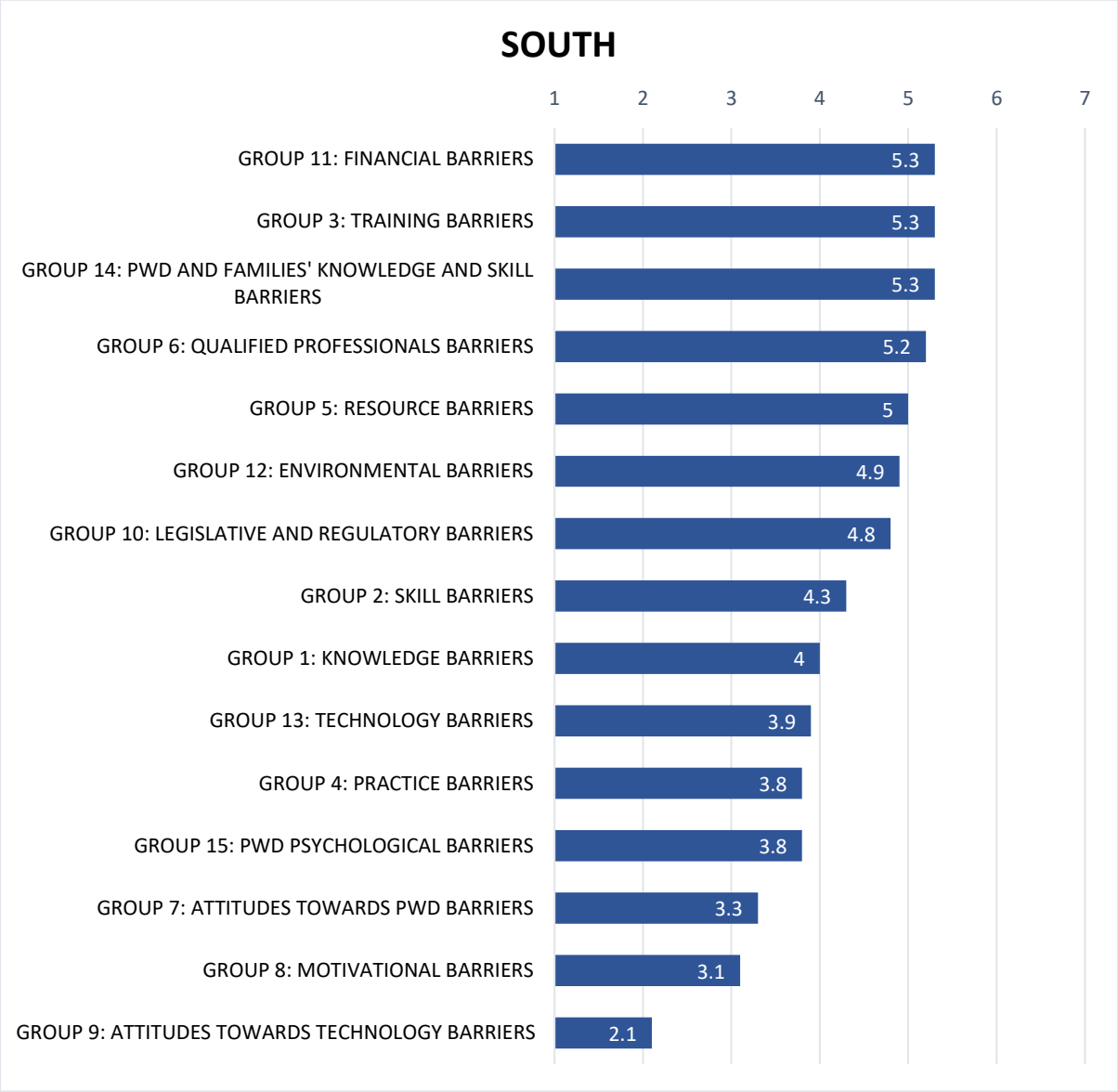
Figure 9: South region**:** average ratings for all groups of barriers. Ratings are made on a 7-point scale (from *1 = strongly disagree* to *7 = strongly agree*). Higher ratings mean stronger barriers. Barriers are sorted from stronger to weaker.



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5. Discussion and Conclusion

This report summarizes the results obtained from a questionnaire administered to SPPD professionals across several countries grouped as Central, East, North, and South countries.

The analysis of the results shows the following main group of barriers to be the most severe (rating > 4) and needing special attention and measures:

- Group 11: Financial Barriers
- Group 3: Training Barriers
- Group 6: Qualified Professionals Barriers
- Group 5: Resource Barriers
- Group 10: Legislative and Regulatory Barriers
- Group 12: Environmental Barriers
- Group 14: PwD Knowledge and Skill barriers
- Group 1: Knowledge Barriers
- Group 2: Skill Barriers
- Group 4: Practice Barriers

The ordering of groups follows the aggregated data analysis presented in Figure 3.

Although Group 1, 2, and 4 (related to knowledge, skills, and practice) are not perceived as strong barriers, it should be taken into account that those results are from a self-report questionnaire and that they contradict the higher ratings for the need for training (Group 3) and the lack of qualified professionals (Group 6).

The latter positions the problem of lack of training (both in university programs preparing professionals in PCT for PwD and on-the-job refreshing and qualifying courses) as a main barrier to PCT usage in SPPD. The lack of training barrier is the first in severity in the North European countries as well, where the financial barriers are milder.

The overcoming of the lack of training barrier should be systemic, starting from the establishment of university curricula which will account for the exponential growth of PCT and provide the needed competencies for professionals working with PwD. The university curricula should be supported by a system of on-the-job courses which provide updates on new PCT and sharing of good practices. This is especially important for the system of inclusive education which will benefit mostly the education and social and professional inclusion of PwD.

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