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Funding and Provision Models for Mobile Technology for Persons with Disabilities

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Abstract. Research has yet to full investigate the multidimensional factors and mechanisms that contribute to access and adoption of Assistive Technology (AT). This mini-session aims to explore this gap by providing initial indicators for the social return on investment (SRoI) for including mainstream consumer technology in AT provision schemes and report on an analysis of key stakeholder perspectives and documents funded by the Global Accessibility Reporting Initiative (GARI).

Keywords. Assistive technology, universal design, accessibility, mobile technology

1. Introduction

Research has yet to full investigate the multidimensional factors and mechanisms that contribute to access and adoption of Assistive Technology (AT). This mini-session aims to explore this gap by providing initial indicators for the social return on investment (SRoI) for including mainstream consumer technology in AT provision schemes and report on an analysis of key stakeholder perspectives and documents funded by the Global Accessibility Reporting Initiative (GARI).

2. Assistive Technology in Norway, the United Kingdom and Poland

Norway: There is one assistive technology centre in every county [1]. The assistive technology department (NAV Hjelpemidler og tilrettelegging) of the Norwegian Labour and Welfare Service has the overall professional, financial and administrative responsibility for the assistive technology centres. The Norwegian Labour and Welfare Service manages one of the cornerstones of the Norwegian welfare model: the national insurance scheme and other social security schemes. The national insurance scheme intends to secure income for individuals, compensate for expenses and help people to help themselves so that they can manage the challenges of daily living. The Norwegian Labour and Welfare Service has the overall responsibility for the administration, initiation, follow-up and development of the national insurance scheme, which includes assistive technology. Their responsibility is to: • Ensure that the national insurance scheme fulfils the intentions of the law;

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- To guarantee the population legal protection, so that they are treated equally no matter where they live in Norway;
- Be a national 'motor' in developing the services, and ensure that they are always adapted to the needs of the users, and to consider comprehensive solutions for the users in cases where other welfare schemes are involved;
- Cooperate with and establish relations with other relevant stakeholders in the society. The provision of assistive devices in Norway is linked between different services and sectors that cooperate to achieve a holistic assistive device solution in which case the user has to cooperate with different people. Good solutions depend on teamwork between the user and the stakeholders to achieve a common goal, and the stakeholders are the employment services, national insurance service, the employer, transport and communication, cultural sector, technical services, suppliers, health services, social welfare service and the education sector [1].

United Kingdom: In the UK, according to the Authority of the House of Commons, employed and self-employed people can apply to Access to Work which covers fully the cost of communication support (interpreters or captioners per year), workplace adaptations, transport costs etc. The maximum support grant per year is currently £62.900 (Authority of the House of Commons, 2018). Furthermore, the fund also provides for workplace adaptation and it usually requires co-financing from the employer. However, the fund is still not very well known among employers and employees. A major drawback is the requirement to provide 3 different quotes for the AT or service in question and usually, it is the cost that is the deciding factor, not what is working best for the disabled person (Department for Work and Pensions, 2021). This is not means-tested and does not require medical tests etc. The fund supports those with long term disability or illness. However, those who are employed by ministerial government departments, including the Department for Work and Pensions or one of its agencies, will have their departments paying for the support.

Another fund mentioned by the participants, which in fact is a benefit, is the Personal Independence Payment (PIP) (The Department for Work and Pensions, 2021). The fund is notoriously criticized as being available to very few persons with disabilities. From the interviewer's experience and point of view, the benefit is very difficult to obtain for many disabled people. The fund is supposed to support independent living with monthly benefit payments and as with Access to Work, it is not means-tested.

Universities often signpost their students to Disability Student Allowance (DSA) (The Department for Work and Pensions, 2021). The interviewer does not have any reviews of how DSA supports AT, however AT is listed as part of what it pays for. Finally, the Social Services are often mentioned, there are sensory teams within local government that lend environmental aids and some specialized AT to users. Non-means-tested but it is loaned equipment that is not usually able to work with mobile technologies and apps.

Finally, the National Health Service (NHS) provides people with disabilities with some AT, such as hearing aids (low and middle market level), assistive listening technologies (only with cochlear implants) and as mentioned diabetics AT.

The Access to Work programmed provides vital funding for adjustments and support that help disabled people stay at work. Over half of Access to Work users currently benefit from funded aids and equipment, including AT. The scheme is not, however, as

cost-effective as it could be. Some assessors remain wedded to recommending specialist equipment. Mainstream alternatives are often cheaper and just as good. Microsoft Windows' magnification option, for example, performs the same function as specialist magnification software. The latter can cost hundreds or thousands of pounds; the former is free. The Department needs to ensure assessors consistently recommend the latest and best value equipment. It should review and amend assessor training, introducing new, structured professional development requirements. It should also review its support for AT training in Access to Work. Currently, this is offered by specialist equipment providers only, further binding assessors to those providers and their equipment. The Department should introduce a new, general "Access to Work (training)" option. This would provide AT training not linked to receiving specific equipment, opening up the market for AT training and driving down costs. Some users would be trained to use technologies they already own, further reducing costs to the Department.

Poland: In general, AT funding varies in Poland by different funding programs available such as PFRON (State Fund for the Rehabilitation of the Disabled), NFZ (National Health Fund), PCPR (District Family Assistance Centre) and various targeted programs such as employers support to adapt employment environment (European Blind Union, 2018).

The majority of persons with disabilities receive funding from PFRON to obtain some assistive technology, with a co-finance option (State Fund for the Rehabilitation of the Disabled, 2021). NFZ is mostly co-funding medical devices which are also assistive devices, such as hearing aids and cochlear implants. Finally, PCPR is a regional fund that is the most unpredictable. The reason for its unpredictability is the perceived needs of the local population based on previous claims, this means if mostly blind people were approaching the Centre, the majority of funds are expected for this group (perceived greater need). In addition, the fund is fixed, if many people request assistance at the beginning of the financial year, then it is first come first serve, leaving those with sudden disabilities with no support from the centre.

It is interesting to note that the most extensive responses came from two participants who provided great detailed explanations of how the different funding sources work in practice.

Is there a legal right to assistive technology, aids and equipment? This issue has been generally described in the aforementioned Act on Vocational and Social Rehabilitation of Persons with Disabilities and Employment. In more detail, this issue was included in the Regulation of the Minister for Labour and Social Policy on tasks and duties performed by a commune and financed from the means given by the State Fund for Rehabilitation of Persons with Disabilities. The CRPD states that governments should make sure disabled people know about aids, technology and assistive devices and how to use them.

Non-governmental organizations and companies that sell equipment for the visually impaired give advice and information about new technologies. What training is provided in the use of equipment and technology? If local governments or ministries assign tasks to conduct training, the training is as follows:

- computer skills with the use of assistive technologies: speech and magnifying software; and

- the use of modern smartphones and assistive applications. The idea of modern technologies is relatively new in Poland. Thus, training e.g., how to use a smartphone are not conducted in the whole country but in certain groups.

How eligibility for equipment, technology and training is determined depends on who provides the money. If the State Fund for Rehabilitation is the donor, this institution usually sets out the eligibility criteria: children, people with disabilities at working age, the elderly, etc. It is hardly the case that a particular project is addressed to all persons with disabilities. How are aids, equipment and technology funded (for example, free, paid for by the user, means-tested)?

For assistance in financing the purchase of special equipment and software a visually impaired person can apply to the local family aid centre. Such centres receive money from the State fund for Rehabilitation to cover the expenses. The above support is provided by the following programmes:

- the programmes to overcome barriers in communication; and
- the programmes to overcome technical barriers, an Active Self-governance. Financial assistance can also be given by National Health Service. The frequency of financing is determined by the programme and the kind of equipment.

3. Findings

The analysis of the key features that support accessibility for smartphones and tablets has suggested that they are most likely to be classified as accessibility features of a device and hence not immediately likely to fall under the remit of those procuring assistive technologies. Despite the evidence of the relationship with the WHO APL, significant parts of a core product list can be delivered at relatively low cost through a single device, especially where that device is further enhanced with hardware peripherals and apps.

The EAA and MDR would additionally suggest that in most cases, the efforts of manufacturers to ensure that their devices are accessible to the broadest user base is the correct direction to take. The challenge emerges not as a result of the features and functions, but as a result of the limited criteria for procurement which do not support the provision of smartphones and tablets for persons with a disability.

The research has further shown that there is potential for AT to offer wider participation in employment for people with disabilities and increase their independence. Additionally, AT available at mainstream reach, with their lower cost thresholds than specialist equipment, can reduce the costs to the taxpayer and provide a good ratio of SRoI. Mainstream AT devices supplied to people with disabilities based on their individual needs can widen the availability of support and choices based on each individual's preference. The benefits of widening the reach significantly outweigh the cost of supporting funding for mobile assistive technologies.

Overall, GARI listed devices could bridge the gap in what is provided to people with disabilities and their specific needs. The GARI list describes many devices that can be helpful to people with disabilities having in mind that these devices are equipped with built-in accessibility features which are of great use and beneficial to people with

disabilities. Supporting disabled people with access to AT can significantly reduce loneliness and allow them to be more active and participate in society.

The results reveal some complexity in the role of smartphones and tablets, consumer technologies, with assistive technology. Whilst the broad definitions of assistive technology would suggest that the devices would offer features that fall within the remit of assistive products and services. The more detailed analysis of relevant standards indicates that many of the features and functions of the phone, are likely to be classified as contributing to ensuring that the device as a unit is accessible to, as wide a range of users as possible. There are situations where the device is enhanced with a range of third-party products, including emerging technologies and innovative software, where the complete package can be more clearly identified as assistive technology. The package is unlikely to be used by a person without a disability and therefore falls within the definition of assistive technologies.

As a result, it would be challenging to make a solid case to define the "vanilla" version of the device as an assistive technology for procurement within the current framework of specifications and classification. However, a much stronger case can be made to expand the provision of technology for people with disability to incorporate accessible digital technologies, including consumer technologies. Further research into such technologies' benefits and cost-effectiveness would significantly strengthen such a case.

A case would be founded on the principle that any provision is based on purpose and outcomes rather than an increasingly blurred distinction between accessible and assistive products. This would have the additional benefit of "future-proofing" provision to include new technologies such as smart speakers and wearable technologies where the help of those products is demonstrable for people with a disability.

The results additionally revealed six key themes from interviews conducted in Norway, the UK, and Poland. These focused on the funding of AT devices and the needs of people with disabilities; mobile technology as a means for filling the AT gap; improving the quality of life for people with disabilities through access to mainstream technologies; changes for ensuring access to mainstream AT; non-financial barriers to accessing assistive technology; and potential impact for widening the scope of assistive devices by including mainstream devices.

The results suggested that the funded ATs are not meeting the needs of people with disabilities. Barriers exist in the funding processes. Both the technology distributed, and the processes were not up to date. The list of funded devices available limit the choices and exclude technology that can effectively improve the independent living of persons with disabilities. Mobile technology is essential in the lives of people with disabilities. It has the potential to bridge the gap by doing what the AT equipment cannot do. In addition, mobile technology makes better use of AT equipment by enabling interoperability among specialized AT.

or people with disabilities, access to mainstream technologies greatly improves their lives by enabling them to participate in different areas of life. In addition, mainstream technologies help them make better use of the external technologies they own and get the most out of the available applications for mobile phones. The participants supported the idea of ensuring access to mainstream AT for people with disabilities. Changes need to be made in buying and supplying AT devices, software, and equipment. A solution is for the government to step in and provide support or the training needed in an accessible format.

On the other hand, barriers to accessing AT include the lack of training, support, and digital competencies. The lack of awareness of AT and its potential to enhance individual functioning was also emphasized. Interoperability also emerged as a key issue where some mobile phones work poorly with specialized AT. Finally, expanding the list of funded AT devices to include mainstream devices would positively impact and increase the quality of life for people with disabilities, including the elderly, for whom it would reduce loneliness.

The results further revealed 43 potential new metrics for measuring SRoI of AT provision. These metrics focused on the economic and personal benefits of effectively providing AT; and support, provision, eligibility evaluation, and other factors for AT provision.

There is potential for AT to offer wider participation in employment for people with disabilities and increase their independence. Additionally, AT available at mainstream reach, with their lower cost thresholds than specialist equipment, can reduce the costs to the taxpayer and provide a good ratio of social return on investment (SRoI). Mainstream AT devices supplied to people with disabilities based on their individual needs can widen the availability of support and choices based on each individual's preference. The benefits of widening the reach will outweigh the cost of funding for mobile assistive technologies. Overall, Global Accessibility Reporting Initiative (GARI) listed devices could bridge the gap in what is provided to people with disabilities and their specific needs. The GARI list describes many devices that can be helpful to people with disabilities having in mind that these devices are equipped with built-in accessibility features which are of great use and beneficial to people with disabilities. Supporting disabled people with access to AT can significantly reduce loneliness and allow them to be more active and participate in society.

4. Key Recommendations

This report poses several key recommendations for policy and practice.

- Promote access to enabling technology as a right, in line with and achieving sustainable development goals and UNCRPD for people with a disability.
- Publish a case for the use of consumer digital technologies as an essential requirement to access virtual and hybrid services for people with a disability.
- Promote and disseminate the need to remove the artificial limitations of a narrow focus for provision as no longer appropriate because of the pervasive nature of personal digital technology.
- Build a case for increased access to personal digital technology at a policy level based upon enhanced expectations and positive attitudes towards the devices.
- Leverage the potential impact of emerging technologies built upon personal digital technologies to enhance the lives of people with a disability.
- Seek to create sustained and independent information sources with key partners such as GSMA for distribution to professionals and funders.
- Develop structured and certified training in the use of accessible digital technologies and their impact for professionals and other stakeholders.

- Collate and curate resources to support peer to peer training in personal digital technologies for people with disabilities.
- Establish a framework of approaches and resources for use by manufacturers and operators as a coherent approach to providing information for customers.
- Build an online tool by which people with disabilities can draft a personal rationale and case for the provision of personal digital technologies.
- Undertake a review of initiatives by operators and vendors for people with a disability to include low-cost handsets or discounts, specialized leasing opportunities and customized tariffs.
- Create resources and materials to support lobbying for the removal of sales tax of personal digital technologies for those with long term disabilities.
- Initiate and awards for innovation in the provision of personal digital devices with partners such as Zero Project and GSMA.
- Create examples of integrated packages of handset and peripherals which could be made available through telecoms operators and device vendors directly to those with disabilities.
- Provide updates and information on innovation and trends for facilitators and policymakers.
- Promote the need for National AT strategies that include personal digital technologies by drafting a model strategy for customization by public bodies and NGO's.
- Promote direct funding models such as the AT Passport model proposed in Ireland.

Further, the results suggest a need for continually raising awareness, primarily via civil society organizations of persons with disabilities as well as mainstream media outlets. This would enable advocates to:

- Raise awareness for the different kinds of accessibility features of mainstream technology that can fill the gaps between the needs of people with disabilities and the AT equipment they use as well as the situational barriers they find themselves in.
- Showcase the value of mobile technology for people with disabilities to improve and enhance independent living.
- Demonstrate the ways in which the GARI listed technologies have the potential to fill the gaps for people with disabilities by increasing interoperability with specialized AT.
- Promote access to mainstream technologies in order to improve the quality of life for people with disabilities by facilitating ease of communication in an IoT context.

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References

[1] Sund, Terje. "Assistive Technology in Norway-a Part of a Larger System." Departament of Assistive Tecnology, Noruega (2017).
[2] GARI: https://www.gari.info/index.cfm
[3] Can Accessible Consumer Tech Bridge the Gap? http://blog.gari.info/2022/07/can-accessible-consumer-tech-bridge-gap.html
[4] Are smartphones Assistive Technology? http://blog.gari.info/2022/05/are-smartphones-assistive-technology.html
[5] Universal Design Day 2023 http://udday.com/
[6] Fundamentals of Universal Design https://universal.design/course
[7] Universal Design Study Tours https://www.inclusivecreation.com/study-tour
[8] The Inclusion Game: Putting Diversity, Equity and Inclusion, DEI in your company's DNA https://inclusiongame.com/
[9] Universal Design Merchandise https://universal.design/merch