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Fri Aug 2 07:47:14 2019

Citations:

Bluebook 20th ed.

Delia Ferri, *Subsidising Accessibility*, 2015 EUR. ST. AID L.Q. 51, 67 (2015).

APA 6th ed.

Ferri, D. (2015). *Subsidising accessibility*. *European State Aid Law Quarterly (ESTAL)*, 2015(1), 51-67.

Chicago 7th ed.

Delia Ferri, "Subsidising Accessibility," *European State Aid Law Quarterly (ESTAL)* 2015, no. 1 (2015): 51-67

McGill Guide 9th ed.

Delia Ferri, "Subsidising Accessibility" [2015] 2015:1 *European State Aid L Q (ESTAL)* 51.

MLA 8th ed.

Ferri, Delia. "Subsidising Accessibility." *European State Aid Law Quarterly (ESTAL)*, vol. 2015, no. 1, 2015, pp. 51-67. HeinOnline.

OSCOLA 4th ed.

Delia Ferri, 'Subsidising Accessibility' (2015) 2015 EUR ST AID LQ 51

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'Subsidising Accessibility'

Using EU State Aid Law and Policy to Foster Development and Production of Accessible Technology

Delia Ferri*

Accessible technology encompasses a series of different universally designed and assistive products. The market for these products is wide and highly diversified. However, a common trend can be identified: Private industry is hesitant to engage in experimental products which require massive development and production costs, and is reluctant to invest in developing goods without a clear consumer demand. In this context, the role of public subsidies is of key importance. This article aims to explore whether and to what extent accessible technology has been fostered under the current EU legal framework, and to investigate the potential role of State aid in the future. In particular, the article discusses whether accessibility has been taken into consideration in the evaluation of support schemes by the Commission (especially under Article 107(3)(c) TFEU), and whether there is the opportunity to consider it. Particular attention is paid to aid for R&D in the field of technology, and to schemes specifically aimed at stimulating the production of technological goods. The article also considers whether and to what extent the 2008 General Block Exemption Regulation (GBER) has allowed Member States to use public subsidies to encourage the production of accessible technology. Finally, taking into consideration that the EU has recently undergone a wide-ranging reform of the rules governing State aid, the article reflects on the possible changes in the EU State aid regulation that might nudge the market in a more 'accessible' direction.

Keywords: Accessible technology, GBER, R&D&I, Risk Capital Guidelines, SMEs, Technology

I. Introductory Remarks

Accessible technology¹ has enabled more persons with disabilities than ever before to communicate

and participate fully in society. It has proved to be a key factor in reducing the environmental and attitudinal barriers disabled people commonly face²: Accessible technology is, at least to a certain extent, the

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¹ This article adopts a general notion of technology defined as the making, modification or usage of tools, machines, or processes. In line with the majority of the legal scholarship dealing with technology, this analysis relies on this broad concept. Among others, Koops defines 'technologies' as 'the broad range of tools and crafts that people use to change or adapt to their environment' (Koops, 'Ten Dimensions of Technology Regulation: Finding your Bearings in the Research Space of Emerging Technologies' in: Goodwin, Koops and Leenes (eds), *Dimensions of Technology Regulation*, (Wolf 2010), 310. The conception of accessibility adopted by this paper is also a general one: namely, 'accessibility' refers to 'the extent to which products, systems, services, environments or facilities can be used by people from a popula-

conditio sine qua non for people with disabilities to enjoy their rights, such as the right to education,³ freedom of expression or the right to move.⁴

In line with the International Standardization Organization (ISO) and International Electrotechnical Committee (IEC) 'Guide 71. Guidelines for standards developers to address the needs of older persons and persons with disabilities',⁵ accessible technology encompasses both universally designed technological products and assistive technology (AT). The former are technological goods that are readily usable by most users without any modification.⁶ The latter includes assistive, adaptive and rehabilitative devices aimed at compensating for functional limitations. AT can be acquired commercially off-the-shelf, modified or customized and covers any kind of equipment, ranging from low-tech walking devices to high tech assistive Information and Communication Technology (ICT).⁷ The broad scope of AT is reflected in the main headings of the ISO classification system, which embraces: assistive products for personal

medical treatment, orthoses and prostheses, assistive products for personal care and protection, for personal mobility, for housekeeping, furnishings and adaptations to homes and other premises, assistive goods for employment and vocational training, and assistive tools for recreation. AT also comprises Ambient Assisted Living (AAL) solutions (eg ubiquitous computing and sensing, ubiquitous communication, and intelligent user interfaces), although these are specifically targeted to older people, rather than to persons with disabilities.

At present, universally designed technology represents a very small segment of the global market. In the long run, it should gain more commercial relevance because it has the potential to appeal not only to buyers with disabilities, but also to elderly customers, and ideally to all consumer groups. However, the few prominent examples of universal designed projects in the electronic and communication industries do not represent the majority of current practice and actually are an 'exception'.⁸ According

tion with the widest range of characteristics and capabilities to achieve a specified goal in a specified context of use' (see Clause 2.1 of the EN ISO 26800:2011). For a general definition see Narasimhan (ed), *e-Accessibility Policy Handbook for Persons with Disabilities*, (Hemkunt Publishers 2011), 3.

- 2 Roulestone, *Enabling Technology: Disabled people, work, and new technology* (Open University Press 1998). See also Fossetol, 'Stairway to Heaven? ICT POLICY, Disability and Employment in Denmark, The Netherlands, UK and Norway' (2007). <www.af-wri.no/stream_file.asp?iEntyId=2626> accessed 30.10.2014.
- 3 Amongst others, Rice, 'Connect a School, Connect a Community. Assistive Technologies for Persons with Disabilities', National University of Ireland, Galway, 2012; Abbott, Brown, Evett, Standen and Wright, 'Learning Difference and Digital Technologies: A literature review of research involving children and young people using assistive technologies 2007-2010', <<http://www.kcl.ac.uk/sspp/departments/education/research/crestem/steg/recentproj/assistivetech.asp>> accessed 30.10.2014. A study conducted in Bangladesh and published in 2012 demonstrated that assistive technology increases the likelihood of human rights enjoyment: see Borg, Larsson et al, 'Assistive technology use and human rights enjoyment: a cross-sectional study in Bangladesh', (2012) *International Health and Human Rights* 12 et seq.
- 4 Tower, 'Disability through the lens of culture', [2003] *Journal of Social Work in Disability and Rehabilitation* 5. See also Ripat and Woodgate, 'The intersection of culture, disability and assistive technology' [2011] *Disability and Rehabilitation. Assistive Technology* 87.
- 5 ISO/IEC, 'Guide 71. Guidelines for standards developers to address the needs of older persons and persons with disabilities'. <http://www.iso.org/iso/iso_iec_guide_71_2001.pdf> accessed 30.10.2014.
- 6 The origins of Universal Design date back to the early 1950s. Because of the high number of veterans of World War II, the public has slowly developed an interest in the needs of disabled people (Gassmann and Reepmeyer, 'Universal Design – Innovations for All Ages', in Kohlbacher and Herstatt (eds), *The Silver Market Phenomenon*, (Springer 2008) 125, 128. The theory

of 'universal design' started later, namely in 1997, when a group of architects, led by Ronald Mace, laid down the seven rules of universal design: equitable use, flexibility in use, simple and intuitive use, perceptible information, tolerance for error, low physical effort, and size and space for approach and use. This means that the design must be useful and marketable to people with diverse abilities and the same means of use are to be provided for all users. The design must accommodate a wide range of individual preferences and abilities. The use of the design must be easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level, and must provide necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities. The design must minimise hazards and adverse consequences of accidental or unintended actions, and can be used efficiently and comfortably and with a minimum of fatigue. The seventh principle alludes to the fact that appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture or mobility. Article 2 of the UN Convention on the Rights of persons with Disabilities provides a legal definition of universal design, which constitutes a firm point of reference. This provision states that 'universal design' is 'the design of products, environments, programmes and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialised design'.

- 7 Deloitte, 'Access to Assistive Technology in the European Union' Report for the European Commission, 2003. <http://www.accessibilidade.net/at/access_AT_EU.pdf> accessed 30.10.2014. For a detailed definition of ICT AT, see UNESCO, 'Global Report: Opening New Avenue for Empowerment. ICT to Access Information and Knowledge for Persons with Disabilities', 78. <<http://unesdoc.unesco.org/images/0021/002197/219767e.pdf>> accessed 30.10.2014. The technical literature on assistive technology is massive; *inter alia* see Scherer, *Assistive Technologies and Other Supports for People with Brain Impairments* (Springer 2012).
- 8 Vanderheiden, 'Barriers, Incentives and Facilitators for Adoption of Universal Design Practices by Consumer Product Manufacturers'. <http://trace.wisc.edu/docs/hfes98_barriers/barriers_incentives_facilitators.htm> accessed 30.10.2014.

to Gassmann and Repeyer, private industry has little experience when it comes to Universal Design (UD), and the tasks and costs are still unknown.⁹ The final report of the project 'Universal Design in an Era of Global Demographic Change'¹⁰ compared business cases in Japan, South Korea, Germany and Italy. It found that in Europe UD as a concept is mostly confined to academic research, while Asia is courageously implementing it, but still at a relatively slow pace.

By contrast, the market of AT is broad. In 2010, the annual value of the European Union (EU) market for assistive devices as a whole was estimated at €30 billion.¹¹ A few national reports highlight that the size of national markets for accessible technology is growing. For example, according to the UK Office of Fair Trading, the current value of the UK sector for mobility AT is between £430 million and £510 million, and there are potentially over 4.3 million mobility AT users in the UK.¹² In 2010, the British Healthcare Trades Association appraised that the sales value of mobility products, including wheelchairs and scooters, was £200 million.¹³ Despite this trend, the market for AT as a whole appears underdeveloped. First, generally speaking, with the notable exception of hearing aid,¹⁴ the EU AT market is dominated by small and medium enterprises (SME). Especially, in some countries, such as Italy, the market is extremely 'patchy' and most of the players are micro-enterprises that produce locally.¹⁵ Secondly, there is a need for research and development (R&D) to improve existing products and cre-

ate new ones. For instance, in cases of particularly severe physical disabilities, the AT that is currently on the market is often deficient, or sometimes unsatisfactory, or inappropriate for the needs of the person. This is due to the fact that people with disabilities, according to the 'European Thematic Network on Assistive Technologies and Inclusive Solutions for All', are not viewed as potential consumers,¹⁶ but rather as people in need of assistance. Thirdly, there is a clear cleavage between AT for people with disabilities and assistive devices for older people. Although the products (eg mobility devices,¹⁷ ICT solutions for home care, adapted living spaces) are often interchangeable and are truly useful for both older persons and people with disabilities,¹⁸ enterprises appear to target these markets (and products) separately. In addition, currently, AT are mainly provided through health or social services, or, more generally, support schemes for people with disabilities (Service Delivery Models - SDMs). As highlighted in different studies, SDMs are either medically or socially oriented, rather than consumer oriented. This means that the service provider acts as an intermediary between the producer of the available assistive products and the final end-user (person with disabilities). The final end-user in this model does not decide on whether the assistive product meets their needs. SDMs usually include lists of eligible products, which often are not the most advanced (or the newest).¹⁹ Deloitte, in its study on assistive ICT, highlights that in some countries few or no assistive ICT solutions are part of the

9 Gassmann and Repeyer, 'Universal Design – Innovations for All Ages', in: Kohlbacher and Herstatt (eds), *The Silver Market Phenomenon* (Springer 2008), 125 et seq, 130.

10 Project finance by the Robert Bosch Stiftung and run from September 2007 to March 2008. The final report is available at <http://if-universaldesign.eu/html/ud/g/Bilder_Material_/downloadcenter/UDigdW_english_mail.pdf> accessed 30.10.2014.

11 European Commission. 'Removing Obstacles for the Disabled', Policy Brief of DG Justice. <http://ec.europa.eu/justice/citizen/document/files/disabled_en.pdf> accessed 30.10.2014.

12 Office of Fair Trading, 'Mobility Aids: A Market Study (2011)'. <http://www.ongov.uk/shared_of/market-studies/of1374> accessed 30.10.2014. See also Consumer Focus, 'Equipment for older and disabled people: an analysis of the market' (2010). <<http://www.consumerfocus.org.uk/files/2010/11/Equipment-for-older-and-disabled-people-an-analysis-of-the-market.pdf>> accessed 30.10.2014.

13 Ahtonen and Pardo, 'The Accessibility Act – Using the single market to promote fundamental rights' (2013). <http://www.epc.eu/documents/uploads/pub_3393_the_accessibility_act.pdf> accessed 30.04.2014.

14 Stack et al., 'Analysing and federating the European assistive technology ICT industry', Final Report, EC Publications (2009), 11.

15 Storelli and Tosello, 'Prospettive nell'assistenza protesica e mercato degli ausili', OBV - Osservatorio Biomedicale Veneto (2012). <<http://www.osservatoriobiomedicaleveneto.it/upload/documentazione/23/prospettivexweb.pdf>> accessed 30.04.2014.

16 See <www.at4all.eu/default.aspx> accessed 30.04.2014.

17 See Martinsa and Santos et al., 'Assistive mobility devices focusing on Smart Walkers: Classification and review', (2012) *Robotics and Autonomous Systems*, 548.

18 Bogue, 'Robots to aid the disabled and the elderly', (2013) *Industrial Robot: An International Journal* 519.

19 A study conducted in Germany with regards to assistive devices for people with ASL shows that, beside other bureaucratic problems, public financing covers only low priced assistive devices. See Henschke, 'Provision and financing of assistive technology devices in Germany: A bureaucratic odyssey? The case of myotrophic lateral sclerosis and Duchenne muscular dystrophy', (2012) *Health Policy* 176.

'positive list' of procured products through the SDMs. Hence SDMs themselves often function as a barrier to innovation: the important 'chicken-and-egg' challenge in the AT marketplace proves that industry is reluctant to invest in products without an expressed demand from service providers, whereas service providers cannot get engaged unless there are products to work with.

Even though the European markets for universally designed technology and AT appear to be different and internally diversified, the common challenge highlighted above is that industry is unwilling to engage in product innovation²⁰ and in experimental products that require massive costs.²¹ This challenge echoes a common trend in the technology sector: the decision to innovate often takes place under great uncertainty,²² and the path from an idea to a ready product is quite long. The so-called 'valley of death' exists at an intermediate stage of this process, between basic research and the commercialisation of a new product.²³

This article therefore aims to explore whether and to what extent the EU State aid legal framework has fostered the development of accessible technology and attempts to investigate the potential role of State aid in the future in a general sense, and in eliminating the above mentioned 'valley of death'.

This article is structured as follows. Section II broadly addresses the pertinent legal context. It does so by firstly examining the initiatives that the EU is adopting on both accessibility and innovation, and then by succinctly examining the role of State aid in

connection with the relevant regulatory framework. Section III explores whether accessibility has been taken into consideration in the evaluation of support schemes aimed at increasing technological development, and whether these rules have allowed Member States to subsidise accessible technology. Even though a few measures directed to foster the ICT sector were assessed and approved under Article 107(3)(a) TFEU, in compliance with the Regional Aid Guidelines 2007-2013,²⁴ this Section pays particular attention to aid assessed under Article 107(3)(c) TFEU in light of the 2006 Research, Development and Innovation Framework (2006 R&D&I Framework),²⁵ or in light of the Guidelines on State aid to promote risk capital investments in small and medium-sized enterprises (Risk Capital Guidelines).²⁶ Section IV focuses on the arguable role of 2008 General Block Exemption Regulation (GBER) in allowing Member States to use public subsidies to encourage the production of accessible technology. Section V discusses whether and to what extent the recently approved guidelines on aid to R&D&I²⁷ and risk finance aid,²⁸ which entered into force as of 1 July 2014, might nudge the market in a more 'accessible' direction, and attempts to identify what changes in the EU State aid regulation would be desirable. Attention is paid to the *UN Convention on the Rights of Persons with Disabilities* (hereinafter 'the Convention' or the 'UNCRPD') as a source of legal obligation for the EU to use State aid policy in a way to enhance accessible technology. Finally, Section VI offers some concluding remarks.

20 In this article innovation is conceived, in line with the Community framework for State aid for research and development and innovation, [2006] OJ C 323/1, as 'related to a process connecting knowledge and technology with the exploitation of market opportunities for new or improved products, services and business processes compared to those already available on the common market, and encompassing a certain degree of risk'. Product innovation is referred to changes to the products themselves, encompassing the creation of new products or the improvement of existing products.

21 For strictly medical devices (internal to body), like egendovascular devices, the barriers include regulatory approvals from competent authorities. See for the Commission assessment of State aid N 639/2005 – Ireland. Abbott Vascular Devices Ireland, Letter of 04.06.2006 C(2006)1189 final, [2006] OJ C/207.

22 For an account of economic theories on innovation, see *inter alia* Fatur, *EU Competition Law and the Information and Communication Technology Network Industries*, (Hart 2012), 59 et seq.

23 Ford and Koutsky et al., 'A Valley of Death in the Innovation Sequence: An Economic Investigation' (2007) SSRN <<http://ssrn.com/abstract=1093006>> accessed 30.10.2014.

24 In 2013, the Commission decided not to raise objection to the aid granted by Polish authorities to Samsung Electronics Polska Sp. z o.o. for an initial investment project in the Mazowieckie and Wielkopolskie regions, consisting in the extension of an existing establishment and introduction of new modern solutions in software for smart consumer electronic products. As the aid aims at promoting regional development, the Commission has assessed the compatibility of the notified measure with the Internal market in the light of the Guidelines on national regional aid.

25 Community framework for State aid for research and development and innovation, [2006] OJ C 323/1. For an overview of this framework, *inter alia* Kleiner, 'The New Framework for Research, Development and Innovation', (2007) 6(2) EStAL 231.

26 Community guidelines on State aid to promote risk capital investments in small and medium-sized enterprises [2008] OJ C 194/2.

27 Communication from the Commission- Framework for State aid for research and development and innovation [2014] C 198/1.

28 Guidelines on risk finance aid for 2014-2020, [2014] OJ C19/4.

II. Setting the Scene

1. Accessibility and Innovation: Between Regulation and Promotion

In recent years the EU has attempted, on the one hand, to foster accessibility,²⁹ and on the other, to boost research and development, as well as innovation. These efforts, however, have run on separate tracks: the first being 'regulatory', the latter 'promotional'.

Further, having concluded³⁰ the UNCRPD,³¹ the EU has committed itself to ensure protection against discrimination, full access and active participation of persons with disabilities in political, economic, social and cultural life. Accessibility is a key principle of the UNCRPD, envisaged in Article 3, and spelled out in Article 9: it encompasses physical accessibility, economic accessibility (ie affordability) and information accessibility.³² Accessibility gives rise to specific applications in other substantive articles. Article 4 on general obligations refers to accessible information (subsection h); Article 13 deals with access to

justice; Article 21 provides for access to information; Article 30 concerns access to cultural goods and services; Article 31 deals with accessibility of statistical and research data of relevance for the realisation of the Convention; and Article 49 ensures that the UNCRPD is available in accessible formats.³³ As underlined by Foggetti,³⁴ the Convention does not specify any criteria to measure accessibility, but mentions UD and AT as means to ensure it.³⁵ In particular, the UNCRPD makes clear that the obligation to spread UD does not exclude assistive devices for particular groups of persons with disabilities, and Article 26 affirms that Parties to the Convention must promote the availability, knowledge and use of assistive technologies designed for persons with disabilities.

In compliance with the UNCRPD, the European Disability Strategy 2010-2020 (EDS)³⁶ makes a strong pivot in accessibility (broadly conceived)³⁷, which is one of the areas of EU programmatic action. Namely, in the EDS, the Commission proposes to use legislative instruments (as done in the past)³⁸ and standardisation to optimise accessibility of the built environ-

29 Accessibility requirements for some goods and services have introduced in European regulations in the early 2000s (eg for most public railway vehicles): for a review see Waddington, 'A Disabled Market: Free Movement of Goods and Services in the EU and Disability Accessibility', (2009) *European Law Journal* 575. Under former EU public procurement law, contracting authorities and entities were allowed (but not required) to implement various measures to advance equal opportunities when awarding contracts. This referred not only to the built environment, but also to goods and services falling under the scope of the Directives (Boyle, 'Disability issues in public procurement', in Arrowsmith and Kunzlik, *Social and Environmental Policies in EC Procurement Law*, (Cambridge University Press 2009), 320. The new public procurement Directives makes accessibility an obligation: see Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/EC, [2014] OJ L 94/65. There are also several legislative instruments addressing accessibility of information and eAccessibility. For a general review, see *inter alia* MeAC - Measuring Progress of E-Accessibility in Europe, Assessment of the Status of E-Accessibility in Europe, <<http://www.eaccessibility-progress.eu/index.php?id=1132>> accessed 30.10.2014. An overview of the EU legislation is also provided in the European Commission Report on the implementation of the UN Convention on the Rights of Persons with Disabilities (CRPD) by the European Union, SWD(2014) 182 final. See also Lawson, 'Reasonable Accommodation and Accessibility Obligations: Towards a More Unified European Approach?' (2010) 11 *European Anti-discrimination Law Review* 11.

30 Council Decision 2010/48/EC, [2010] OJ L 23/35. The procedure of conclusion was completed only one year later, when the EU officially deposited the instrument of ratification, on December 23rd 2010. On the negotiation process see De Burca, 'The EU in the negotiation of the UN Disability Convention', (2010) *European Law Review* <<http://ssrn.com/abstract=1525611>> accessed 30.10.2014.

31 UN, *Convention on the Rights of Persons with Disabilities*, adopted by the General Assembly on 13 December 2006, Res. 61/106, <<http://www.un.org/disabilities/default.asp?id=150>> accessed 30.04.2014. The Convention (together with its Optional Protocol) was opened for signature on March 30, 2007, and entered into

force on May 3, 2008. For a general overview on the UNCRPD see *ex pluribus*: Kayess and French, 'Out of Darkness into Light? Introducing the Convention on the Rights of Persons with Disabilities', (2008) *Human Rights Law Review* 1.

32 See *supra* n 1.

33 A relevant provision is also Article 19 UN CRPD, which imposes a general obligation on the Parties to recognise the 'equal right of all persons with disabilities to live in the community, with choices equal to others', and to 'take effective and appropriate measures to facilitate full enjoyment by persons with disabilities of this right and their full inclusion and participation in the community'.

34 Foggetti, 'e-Accessibility definition in the UN Convention on the Rights of Persons with Disabilities: current issues and future perspectives', (2012) *Computer and Telecommunications Law Review* 56.

35 See also UN Committee on the Rights of persons with Disabilities, 'Draft General Comment on Article 9 of the Convention', <<http://www.ohchr.org/en/hrbodies/crpd/pages/crpdindex.aspx>> accessed 30.04.2014.

36 European Commission, 'European Disability Strategy 2010-2020: A Renewed Commitment to a Barrier-Free Europe' Communication of 15.11.2010, SEC(2010)1324 final.

37 The EDS states that: "Accessibility" is defined as meaning that people with disabilities have access, on an equal basis with others, to the physical environment, transportation, information and communications technologies and systems (ICT), and other facilities and services. There are still major barriers in all of these areas. For example, on average in the EU-27, only 5% of public websites comply fully with web accessibility standards, though more are partially accessible. Many television broadcasters still provide few subtitled and audio-described programmes' (EDS, see *supra* n 34). See Charitakis, 'An introduction to the disability strategy 2010-2020, with a focus on accessibility', (2013) *Ars Aequi* 28, <http://www.nuigalway.ie/dream/downloads/an_introduction_to_the_disability_strategy_20102020_with_a_focus_on_accessibility.pdf> accessed 30.10.2014.

38 See *supra* n 29.

ment, transport and ICT, in line with the Digital Agenda and Innovation Union flagship initiatives, and reveals its intention to foster accessible goods and services through *inter alia* public procurement. However, it does not draw any specific distinction among physical or information accessibility, and gives the impression that they could all be pursued through the same ‘regulatory’ policy. In addition, the Commission *expressis verbis* lays down its commitment to promote an EU-wide market of assistive devices,³⁹ and to improve AT availability and choice. Whilst the Commission does not mention ‘economic accessibility’, or affordability of AT, these aspects seem to be included in the promotion of an EU-wide market: Reducing fragmentation potentially leads developers to adjust or reduce prices and to provide consumers with more selection in more marketplaces. It is not however entirely clear how the Commission intends to pursue this latter objective: Certainly, it envisages the use of binding instruments (hard law) to be enacted within the field of Internal market (using Article 114 TFEU as a legal basis). The main short-term goal seems to be a cross-cutting ‘European Accessibility Act’, which should increase the demand of accessibility by imposing, at various levels, obligations to provide accessible good and services.⁴⁰ The proposal was supposed to be released by 2012, but it is still underway, creating doubt over its eventual scope and content.

In parallel, and with actions that date back much earlier than the EDS, the EU has financed several research projects on accessible technology (especially on AT),⁴¹ and has put in place remarkable initiatives

to foster innovation and Key Enabling Technology (KET),⁴² in line with the EU 2020 Strategy⁴³ and the Innovation Union.⁴⁴ The Innovation Union flagship initiative is intended to incentivise R&D&I that address the challenges that society faces, including health and demographic change (especially the increasing elderly population). In this respect, the EU is advancing a European Innovation Partnership on Active and Healthy Ageing,⁴⁵ and is discussing a more active participation of the EU in the AAL Joint Programme.⁴⁶ Hence, with regard to R&D&I, the Commission has shown a ‘promotional’ approach, rather than a ‘regulatory’ one, encouraging technological development as a necessary step towards ‘a smart, sustainable and inclusive economy’.

2. Accessibility and Innovation: The Role of State Aid Regulation

State aid is not mentioned in the EDS in the context of accessibility actions. As highlighted above, the EDS has embraced a regulatory approach for all aspects of accessibility (accessibility to transportation, built environment, ICT, goods and services), and seems more oriented in boosting the demand-side of accessible technology through legislation and standardisation, instead of incentivising production. The Innovation Union flagship also focuses on enhancing the demand for innovative products and services, and highlights that innovative companies can only be successful if there is a market for their goods and services.⁴⁷

39 See also European Commission, ‘Staff Working Document - Report on the implementation of the UN Convention on the Rights of Persons with Disabilities (CRPD) by the European Union’, 05.06.2014, SWD(2014)182 final.

40 In this sense, Charitakis, ‘An introduction to the disability strategy 2010-2020, with a focus on accessibility’, (2013) *Ars Aequi* 28, <http://www.nuigalway.ie/dream/downloads/an_introduction_to_the_disability_strategy_20102020_with_a_focus_on_accessibility.pdf> accessed 30.10.2014.

41 Amongst others, see Veritas project, available on the Internet <<http://veritas-project.eu/index.html>> accessed 30.10.2014.

42 Key enabling technologies (KETs) encompass micro-/nanoelectronics, nanotechnology, photonics, advanced materials, industrial biotechnology and advanced manufacturing technologies (which are relevant in developing accessible technology). European Commission, ‘A European strategy for Key Enabling Technologies – A bridge to growth and jobs’ Communication of 26.06.2012, COM(2012) 341 final.

43 European Commission, ‘Europe 2020 – A strategy for smart, sustainable and inclusive growth’, Communication of 03.03.2010, COM(2010) 2020 final.

44 European Commission, ‘Europe 2020- Flagship Initiative Innovation Union’, Communication of 06.10.2010, COM(2010) 546 final.

45 European Commission, ‘Taking forward the Strategic Implementation Plan of the European Innovation Partnership on Active and Healthy Ageing’, Communication of 29.02.2012, COM (2012) 083 final.

46 European Commission, ‘Proposal for a Decision on the participation of the Union in the Active and Assisted Living Research and Development Programme jointly undertaken by several Member States’, Communication of 10.07.2013, COM(2013) 500 final. The AAL JP was created by 20 EU Member States and 3 associated countries in 2008. The EU decided to match participating countries’ support with funding from the 7th Framework Programme for Research and Technological Development (FP7), based on Article 185 TFEU. The AAL Programme focuses on the ‘Valley of Death’ part of the innovation chain where research results need to be translated into new products and services ready to enter the market. See *supra* Section I.

47 European Commission, ‘State of the Innovation Union 2012. Accelerating change’, Communication of 21.03.2013, COM(2013) 149 final, 19

This seems to be the consequence of the inherent bias towards state intervention in the market, which is, generally speaking, unwelcome since it can alter free competition. This is also in line with the less-aid policy and the purely economic approach to State aid professed by the Commission. The EU State Aid Modernisation (SAM)⁴⁸ intends to encourage schemes that support sustainable growth, and attempts to limit aid that does not produce real benefit and distorts competition.⁴⁹ State aid is, in the Commission's vision, an instrument that must be 'handled with care'.

It is well known that Article 107(1) TFEU provides that any aid granted by a Member State or through state resources, which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods, is incompatible with the internal market, insofar as it affects trade between the Member States. However, Article 107(2) and (3) TFEU sets out exemptions to the general ban contained in Article 107(1) TFEU on the premise that markets do not always self-regulate effectively, and State intervention may be required for this purpose and to raise consumer welfare, or protect and promote specific rights or values. Article 107(2) TFEU specifies a number of cases in which national support measures are permissible. Article 107(3) TFEU provides that some aids may be considered compatible with the internal market. Among them, it lists: Aid to promote the economic development of areas where the standard of living is abnormally low or where there is underemployment (lett. a), aid to promote the execution of a project of common European interest or to remedy a serious disturbance in the economy of a Member State (lett. b), and aid to facil-

itate the development of certain economic activities or of certain economic areas, where such aid does not adversely affect trading conditions to an extent contrary to the common interest (lett. c).⁵⁰ While well-established case law has repeatedly stated that Article 107(3) must be interpreted strictly,⁵¹ the Commission has significant discretion to carry out an assessment of economic, technical and policy considerations. However, to increase the degree of legal certainty of its assessment under Article 107(3) TFEU, the Commission has passed various guidelines that identify common rules for evaluating the compatibility of an aid with the internal market. In particular, the Commission has defined both conditions under which public funding of R&D&I generates common benefits while limiting the negative effects from distortions to competition, and criteria to assess State subsidies to SME in the form of risk capital.

The 2006 R&D&I Framework, applicable as of 1 January 2007 until June 2014 and recently replaced by new guidelines, defined the Commission's margin of appreciation in assessing the compatibility of State aid under Article 107(3)(c) TFEU, or under Article 107(3)(b) TFEU (in case of research that contributes in a clear and identifiable manner to the EU interest). As it will be further detailed in Section III, the aim of the 2006 R&D&I Framework was two-fold: to encourage Member States to devote a larger budget to R&D&I, and to optimise the allocation of State aid, whilst limiting distortions of competition.⁵²

The rules for assessing State subsidies to SME in the form of risk capital, in force till June 2014 and also recently substituted by new guidelines,⁵³ are premised on the fact that there is no general risk capital market failure in the EU, but there are gaps for some types of investments at certain stages of enterprises' development. Despite the Commission's cautious and vigilant attitude, State aid has been conceived a valuable tool to boost R&D&I: in taking stock of the Innovation Union Strategy,⁵⁴ which aims to remove obstacles that prevent innovators from translating ideas into new products and services that can be sold on world markets, the Commission mentions the need for faster standard-setting, the necessity of reducing costs in obtaining patents, smarter public procurement of innovative products and services, and better access to finance for innovators and SMEs. Certainly, the Risk Capital Guidelines are an element of the latter and endorse the 'promotional' approach towards technological development.

48 European Commission, 'EU State Aid Modernisation (SAM)', Communication of 8.5.2012, COM(2012)0209 final.

49 European Commission, 'State aid action plan: Less and better targeted State aid: a roadmap for State aid reform 2005 – 2009', Communication of 07.06.2005, COM(2005)107.

50 Article 107(3) TFEU also mentions (d) aid to promote culture and heritage conservation where such aid does not affect trading conditions and competition in the EU to an extent that is contrary to the common interest, and provides that other categories of aid may be included in a decision of the Council on the proposal of the Commission.

51 Among many others, Case 730/79 *Philip Morris* [1980] ECR 2671.

52 von Wendland, 'R&D&I-State Aid Rules at the Crossroads –taking Stock and Preparing the Revision', (2012) 11 EStAL 389.

53 See supra n 27 and n 28.

54 European Commission, 'State of the Innovation Union 2012. Accelerating change', Communication of 21.03.2013, COM(2013) 149 final

Treaty provisions and guidelines are complemented by a composite system of secondary regulation. In compliance with Article 109 TFEU, the Council adopted Regulation 994/98,⁵⁵ ie the Enabling Regulation, which has empowered the Commission to adopt individual regulations in which it declares certain types of aid to be lawful and exempts them from the obligation of prior notification. Following the Enabling Regulation, in 2006, the Commission adopted the *De minimis* Regulation,⁵⁶ recently replaced by a new regulation.⁵⁷ From 2001 to 2006, the Commission also approved a series of exemption regulations, consolidated and replaced by the 2008 General Block Exemption Regulation (2008 GBER), in force until June 30 2014.⁵⁸ The 2008 GBER included rules on aid to SME, to R&D&I, as well as rules on aid in the form of risk capital, thus confirming the ‘promotional’ approach towards innovation envisaged in the Commission’s guidelines. The 2008 GBER also exempted from notification aid for compensating the additional costs of employing disabled workers, including ‘costs of adapting or acquiring equipment, or acquiring and validating software for use by disabled workers, including adapted or assistive technology facilities, which are additional to those which the beneficiary would have incurred if employing workers who are not disabled’. Even though it remains outside the scope of this analysis, this provision was intended to increase employment of people with disabilities, and to provide easier access to reasonable accommodations (rather than accessibility).⁵⁹ Nevertheless, indirectly and potentially, the 2008 GBER encouraged the demand-side of assistive devices.

III. Has State Aid Fostered Accessible Technology?

1. Aid to R&D&I

As highlighted in Section II, the 2006 Framework provided for *inter alia* a series of criteria to identify the cases in which State aid to R&D&I may be compatible with Article 107(3)(c) TFEU.⁶⁰ It encompassed various types of aid aimed at fostering ‘fundamental research’ (ie experimental or theoretical work undertaken to acquire new knowledge), ‘industrial research’ (ie research for developing new products, or for bringing about a significant improvement in existing products), and ‘experimental development’ (ie the acquiring and using of existing scientific, technological, business for new, altered or improved products, processes or services). Namely, the types of State aid allowed under this Framework were: aid for R&D projects; aid for technical feasibility studies; aid to cover SMEs’ costs relating to intellectual property rights (IPRs); aid to young, innovative companies; aid in support of organisation and process innovation in the service industry; aid for recourse to innovation support and advisory services; aid to SMEs for temporary employment of highly qualified personnel and aid for innovation clusters (ie for ‘groupings of independent undertakings - innovative start-ups, SME and large undertakings as well as research organisations - operating in a particular sector and region and designed to stimulate innovative activity). For each type of aid, the 2006 R&D&I Framework established aid intensity ceilings, speci-

55 Council Regulation (EC) No 994/98 of 7 May 1998 on the application of Articles 92 and 93 EC [now Articles 107 and 108 TFEU respectively] to certain categories of horizontal State aid [1998] OJ L142/1.

56 Commission Regulation (EC) No 1998/2006 of 15 December 2006 on the application of Articles 87 and 88 of the Treaty to *de minimis* aid [2006] OJ L 379/5. Measures that fulfil the criteria of the *De minimis* do not constitute ‘State aid’ and therefore do not need to be notified to the Commission for approval. See *inter alia* Berghofer, ‘New *De Minimis* Regulation: Enlarging the Sword of Damocles’, (2007) EStAL 11.

57 Commission Regulation (EC) No 1407/2013 of 18 December 2013 on the application of Articles 107 and 108 of the Treaty on the Functioning of the European Union to *de minimis* aid OJ 2013 L352/1. For a critical account see *Sinnaeve*, *The Complexity of Simplification: The Commission’s Review of the de minimis Regulation* EStAL 2014, 261.

58 Commission Regulation (EC) No 800/2008 of 6 August 2008 declaring certain categories of aid compatible with the common market in application of Articles 87 and 88 of the Treaty – General Block Exemption Regulation [2008] OJ L214/3 (amended by

Commission Regulation (EU) No 1224/2013 of 29 November 2013 amending Regulation (EC) No 800/2008 as regards its period of application [2013] OJ L320/2).

59 The General Comment on Article 9 of the Convention (UN Committee on the Rights of persons with Disabilities, <<http://www.ohchr.org/EN/HRBodies/CRPD/Pages/GC.aspx>>, last accessed 30 October 2014, adopted on April 2014, clarifies in a straightforward way that accessibility is ‘group related’ and ‘[...] the duty to provide accessibility is an ex ante duty’. By contrast reasonable accommodation is an individual measure and the duty to provide reasonable accommodation ‘is an *ex nunc* duty, which means [it takes effect] from the moment an individual with an impairment needs it in a given situation (work place, school, etc.) in order to enjoy her or his rights on basis of equality in a particular context’.

60 As highlighted in Section II, the Framework also details the boundaries of the Commission’s margin of appreciation to approve R&D aid under Article 107(3)(b) TFEU (ie aid for important projects of common European interest). These rules and their application are however out of the scope of this analysis. For a discussion see von Wendland, ‘R&D&I-State Aid Rules at the Crossroads –taking Stock and Preparing the Revision’, (2012) 11 EStAL 389, at 398.

ifying the percentage of the eligible costs, and stated that the aid should ‘result in the recipient changing its behaviour so that it increases its level of R&D&I activity’⁶¹ and be proportionate. It also provided guidelines that allowed the Commission to verify the extent of distortions of competition and effect on trade, and to validate that the overall balance is positive.

The 2006 R&D&I Framework (as well as the current one) was a horizontal measure and was not directed to any definite sector. Nevertheless, it allowed Member States, even in the period of crisis, to heavily subsidise the technological sector as a whole and, in particular, R&D&I activities of high-tech enterprises.⁶² Between 2007 and 2013, Germany was at the forefront in using State aid, which, nevertheless, were considered a valuable tool by almost all States. In this timeframe, the Commission assessed and approved a plurality of schemes directed to boost horizontally high tech development,⁶³ such as, for example, the German scheme *Richtlinie über die Gewährung von Zuwendungen für Forschung, Innovation und Technologie des Landes NRW*,⁶⁴ or the Spanish schemes INNOTEK⁶⁵ and *Notificación Plan Na-*

cional de Investigación Científica, Desarrollo e Innovación Tecnológica 2008-2011.⁶⁶ Although it is very likely that these schemes subsidised *inter alia* accessible technology development, none of them included accessibility, UD and AT as key features. In some instances, the targeted R&D focused on Information and Communication Technology (ICT) as applied to all sectors (including the medical sector), with no reference to accessibility requirements. This is the case of the German scheme *IKT 2020*,⁶⁷ and the Spanish R&D scheme for ICT.⁶⁸

During the considered timeframe, Member States also promoted R&D&I of nanotechnology, which is particularly relevant in the field of assistive medical devices (eg implants, prosthetics or brain-machine interfaces). For example, the Commission approved the French aid to STMicroelectronics (ST) for the development of new technologies in the nanoelectronics sector. The Commission stated that the French measure, aimed at developing new technologies for the design and production of integrated circuits and at strengthening Crolles-Grenoble cluster as a global leader in the field of advanced CMOS (Complementary Metal-Oxide-Semiconductor), is in line with EU rules on State aid. Again, none of the aid assessed was specifically targeted at accessible technology. However, nanoelectronics is a ‘key enabling technology’, underlying innovation in many branches of industry, and semiconductors are omnipresent in very high-speed communications accessible to all, cloud computing, smart power grids, or e-health.⁶⁹

The lack of any explicit reference to accessibility is mainly due to the fact that the 2006 R&D&I Framework addressed the objective of common interest of promoting R&D&I and did not intend to tackle other policy goals. R&D&I were considered *per se* an objective to pursue, due to the potentials for economic growth, and their appreciable value, both functional and beneficial to providing other public goods (such as public health, accessibility, environmental protection), were overlooked. An additional factor is that the EDS was released in 2010, and the UNCRPD entered into force only in 2011. As a consequence, accessibility has become a major concern and an explicit policy goal only in recent times, well after the publication of the Framework. Unsurprisingly, the Commission never referred in its assessment to additional purposes other than R&D&I, and did not allude to accessibility or accessible technology whatsoever.

61 Para 6 of the 2006 R&D&I Framework.

62 R&D-aid approved under the Framework was granted to different sectors. Several aid measures favoured microelectronics and to a lesser extent ICT-sector. See: European Commission, ‘Mid-Term Review of the R&D&I Framework’ Staff Working Paper of 10.08.2011.

63 European Commission, ‘Mid-Term Review of the R&D&I Framework’ Staff Working Paper of 10.08.2011; Izsak, Markianidou, Lukach and Wastyn, ‘The impact of the crisis on research and innovation policies’, Study for the European Commission DG Research by Technopolis Group Belgium and Idea Consult, Brussels, 2013.

64 European Commission, State aid No N 114/2008 – Germany ‘Guidelines on the granting of aid for research, innovation and technology of the Land of North Rhine-Westphalia’ [2008] OJ C 256.

65 European Commission, State aid N 193/2008 – Spain - Aid scheme supporting the realisation of projects of technological development and innovation in the Basque region (programme INNOTEK) [2008] OJ C/253.

66 European Commission, State aid N 188/2008 – Spain Spanish national Research, development and innovation scheme [2008] OJ C/238.

67 European Commission, State aid N 375/2007 - Germany IKT 2020 - *Forschung für Innovationen* (Amendment of existing State aid scheme N 602/2003 ‘Mikrosysteme’) [2007] OJ C 288.

68 European Commission, Aide d’Etat N 61/2008 – *Espagne Régime d’aides à la R&D pour le développement de la télécommunication et de la société de l’information* [2008] OJ C 184.

69 European Commission, State aid: Commission approves €400 million aid to STMicroelectronics for the Nano2017 research programme, (Press release) IP/14/733 of 25.06.2014.

In some instances, Member States, when notifying the Commission of their aid measures, mentioned social outcomes as an additional objective, which proved to be irrelevant in the overall assessment. This is well exemplified by the Austrian framework scheme 'FFG-Guidelines, R&D&I-programme'⁷⁰ (which *inter alia* funded AAL projects). While notifying the Commission of the aid, the Austrian authorities stated that they were expecting the scheme 'to bring about a technically and financially sustainable effect on sectors of the economy which strengthen competitiveness and the economy and *contribute to social objectives* [emphasis added]'. However these objectives were not taken into consideration by the Commission. As in many other cases, in line with the rationale of the 2006 R&D&I Framework, the Commission carried out an economic assessment: the aid must address well defined market failures that could adversely affect R&D&I (eg in relation to dissemination of knowledge, coordination among different market players and research centres, networking, and information asymmetries), and must display positive effects likely to overcome the distortion of competition deriving by the aid. This 'economic assertiveness' is particularly evident in R&D&I schemes in the medical field (mostly for medical research, rather than for medical assistive devices). A prominent example is the French aid *ISEULT-INUXAC*.⁷¹ In this case, the Commission authorised France to grant €54.5 million aid for the *ISEULT-INUXAC* R&D programme to improve high field magnetic resonance imaging, with a view to a better diagnosis, follow up and treatment of diseases like Alzheimer's disease, strokes and brain tumours, and found the aid to be compatible with its R&D&I framework. In analysing the measure, although acknowledging that aid should ultimately lead to an improvement of public health, the Commission concentrated on the market failures that the programme addressed, and on the fact that there were no immediate market incentives for a programme of that character, given the high technological risks involved. In other words, the Commission relied on the fact that the programme was privately unprofitable, and found the aid 'economically justifiable', but did not take stock of the benefits for society. The potential benefit to public health was merely an ancillary point, an unquantifiable, abstract benefit. It did not influence the Commission's decision not to raise objections.

It seems that the horizontal economic approach adopted by the Commission did not encourage Mem-

ber States to specifically tackle the development of accessible technology. Nevertheless, at the same time it did not impede Member States in putting in place a measure to pursue a specific policy goal (ie accessibility), in so far as this measure fulfilled the requirements laid down in the 2006 R&D&I Framework.

The Commission has also embraced the view that aid measures aimed at R&D&I activity 'close to the market' are likely to develop negative effects on competition, and in particular significant 'crowding out effects'. This has made, on the one hand, the Commission more suspicious (and more careful in its assessment) of aid measures that sustain R&D&I activities which are adjacent to commercialisation of the product or the service. On the other hand, it has made Member States unwilling to invest public money at an intermediate stage of development, between basic research and commercialisation of a new product, and ultimately leaves unresolved the 'valley of death' in the technology sector.

2. Aid in the Form of Risk Capital

The willingness to accept risks in high technology markets is reduced in cases of extreme uncertainty, resulting from the impossibility of predicting results and profits. Therefore, Member States (and the EU) have tried to facilitate access to risk capital through the use of public funds. Hence, many of the national schemes specifically aimed at supporting technological innovation are in the form of risk capital, and from 2007 to 2013, they were assessed under the Risk Capital Guidelines⁷² and eventually approved under Article 107(3)(c) TFEU.

These Risk Capital Guidelines, as highlighted above, were underpinned by the rationale of facilitating access to risk capital for SME (especially those with high growth potential and in the high-tech sector). The provision of equity finance proved vital for

70 European Commission, SA.23274 FFG-Guidelines, R&D&I-programme, Austria - State aid No N 270/2007 (Austria). R&D&I-scheme 'FFG Guidelines' [2008] OJ C 100. See also the letter to the Member State of 18.03.2008 K(2008)1158.

71 See para 1.3.6 of the Framework.

72 Many schemes are indeed borderline ones, and von Wedland in his analysis attempts to show the closeness between risk-capital and the R&D&I-Framework's aid objective: see von Wendland, 'R&D&I-State Aid Rules at the Crossroads - taking Stock and Preparing the Revision' (2012) 11 EStAL 2012 389, at 398

the development of businesses for these enterprises, especially during the stages following their establishment. The Risk Capital Guidelines considered various categories of aid that could remedy market failures, while avoiding severe distortions of competition, ie constitution of investment funds in which the State is a partner, investor or participant; guarantees to investors or venture capital funds covering a proportion of investment losses or in respect of loans; financial instruments in favour of investors to encourage them to provide extra capital; fiscal incentives to investors to undertake investments.

The Guidelines designed a test through which Member States (and the Commission in assessing the aid) could balance the potential positive and negative effects of the aid. In particular, a risk capital measure was compatible with the internal market when the following conditions were met. First, the investment tranches should not exceed 2.5 million per enterprise per year. Second, the aid should be granted up to the expansion or start-up stage of the SMEs. Third, at least 70% of the total budget of the risk capital measure should be in the form of equity and quasi-equity instruments. Fourth, at least 50% of the funding should be provided by private investors. Finally, the risk capital measure should ensure that decisions to invest into target companies are profit-driven and the management of a risk capital measure or fund must be effected on a commercial basis.⁷³

The Risk Capital Guidelines highlighted that the national measure was to pursue an objective of common interest, such as environment, economic growth, employment and cohesion, but there was no reference to accessibility. This of course was mirrored in the national schemes. A careful screening of the

measures notified to the Commission between 2007 and 2013 reveals that no schemes were explicitly targeted to fostering accessible technology or tailored to assistive devices. Similarly to what happened under the R&D&I Guidelines, in the assessment of these schemes (again unsurprisingly) the Commission never considered the goal to promote accessibility, or market failures specific to accessible technology. Nonetheless, in many instances, the measures approved were likely to boost *inter alia* accessible technology production. Relevant examples include the Bavarian Risk Capital Scheme 'Clusterfonds Seed GmbH & Co. KG' to support technology focused micro- and small enterprises, and namely to allow them to conduct R&D for the first prototype or the 'proof of concept' (initial concept),⁷⁴ and the Spanish INVERTEC, aimed to the promotion of projects of innovative undertakings and of projects of technologically based undertakings of Catalonia.⁷⁵ Another pertinent scheme is the second 'edition' of the German *HighTech Gründerfonds II*, a public-private partnership to foster investments in high-tech firms that was approved by the Commission in September 2011.⁷⁶ In particular, this is a venture capital fund, the biggest investor of which is the German State through the Ministry of Economics. The fund materially applies to three different technological fields: IT, Life Sciences and Engineering. The eligibility requirements for obtaining an investment echo the Framework and include, beside other formal requirements (concerning age and location of the potential investee), a technological focus, an entrepreneurial team, a good market opportunity. Universal Design, or accessibility are not a condition, although they might increase the possibilities to receive the investment. The Fund has up to now funded a few companies producing different types of AT: *Desino*, an entrepreneurial team who developed an active wheelchair preventing and reducing lower back pain through its manual hybrid drive and movable seat;⁷⁷ *Exelonix*, an enterprise developing assistance systems for elderly people which offer home emergency call functionality along with easy-to-use internet and communication applications that will enable participation in the information society without barriers;⁷⁸ and *Synoste* which develops novel, implantable, patient friendly, cost-effective and reliable medical devices for correcting skeletal deformities. In some instances, the schemes approved by the Commission are targeted to medical technologies. This is the case

73 On the Risk Capital Guidelines and their application see *inter alia* Nicolaides, 'Financial Engineering Instruments and their Assessment Under EU State Aid Rules', European Economic Policy Briefings 26/2013, Bruges <www.coleurope.eu/sites/default/files/research-paper/beep26.pdf> accessed 20.06.2014.

74 European Commission, State aid N 406/2009 – Germany (Free State of Bavaria) -Risk Capital Scheme 'Clusterfonds Seed GmbH & Co. KG [2010] OJ C158. See also the letter of the Commission of 12.05.2010, K(2010)2979 final.

75 European Commission, Aid measure N 756/2007 – Spain – Risk capital measure INVERTEC 2009- 2011 [2009] OJ C108.

76 European Commission, State aid SA.32520 (2011/N) – Germany Risk Capital Scheme 'High-Tech Gründerfonds II, [2012] OJ C70.

77 See at <www.en.high-tech-gruenderfonds.de/2014/03/fresh-capital-for-desino/> accessed 30.10.2014.

78 See <<http://www.finsmes.com/2013/08/exelonix-raised-funding-high-tech-gruenderfonds.html>> accessed 30.10.2014.

of the German investment fund called *Technologiegründerfonds Sachsen* (TGFS) put in place by the Saxony Land⁷⁹ approved in 2007. The TGFS aimed to provide capital to about 60 economically stable innovative small and micro enterprises, and especially to technology oriented founders, also through equity and quasi-equity investments. Although not explicitly intended to foster accessible technology, the scheme focused *inter alia* on microelectronics and medical technology (which includes medical assistive devices). However, social or health policy goals are not considered by the Commission in its assessment, which is prone to over-emphasising the existence of a market failure.

This purely economic approach has been conducive to sustain technological industry and innovation. However, it does not seem *per se* sufficient to incentivise individual Member States to in turn subsidise the development of accessible technology.

III. The GBER and Aid to Foster Accessible Technology

The 2008 GBER covered several categories of aid relevant to the EU2020 goals that could be used by Member States to nurture technological innovation. It encompassed *inter alia* investment related to SMEs, aid in the form of risk capital, and aid for R&D&I. The 2008 GBER laid down the conditions under which State aid could be considered compatible with the internal market and exempted from prior notification. The aid should be transparent in the meaning of the GBER,⁸⁰ respect the thresholds laid down in Article 6, and have an incentive effect (Article 8 GBER).

Aid in the form of risk capital was covered by Section 6 (Articles 28 et seq), while aid for R&D&I was covered by Section 7 (Articles 31 et seq) of the 2008 GBER. According to Article 29, risk capital measures should take the form of participation in a profit driven private equity investment fund, managed on a commercial basis, and the investment to be made by the investment fund was not to exceed EUR 1.5 million per undertaking per year. Similarly to what provided in the Risk Capital Guidelines, at least 70% of the total budget invested in SMEs should be in the form of equity and quasi-equity instruments, and at least 50% of the funding should be provided by private investors.⁸¹ Article 31 exempted from notification aid for fundamental research, industrial re-

search, and experimental development. The aid intensity ceiling amounted to 100% of the eligible costs for fundamental research; 50% of the eligible costs for industrial research, 25% of the eligible costs for experimental development. Aid intensities for industrial research and experimental development could be increased in case of aid granted to SMEs, in case of projects that involved collaboration between at least two undertakings, between an undertaking and a research organisation, and in case of industrial research, when the results of the project were widely disseminated.⁸²

Undoubtedly, the 2008 GBER allowed for several public financial measures supporting SME and boosting R&D&I, which proved to be functional to the development of accessible technology. Under Articles 28 and 29, Member States put in place different risk capital measures to boost the high-tech sector, such as the Austrian '*Oberösterreichischer Hightechfonds*'⁸³ or Italian '*Fondo Nazionale per l'Innovazione - Capitale di rischio*'⁸⁴. Even though these kinds of schemes are quite likely to affect the development and production of accessible technology, none of them were specific to it, and there is no clear evidence that they have actually contributed to increasing accessibility. Under Article 31 GBER, a few Member States provided direct grants for industrial research and experimental development in the field of AAL: notable examples are the Danish AAL - Ambient Assisted Living, and the Italian Regional scheme (Marche) '*Casa intelligente per una longevità attiva ed indipendente dell'anziano*'.

In line with the requirements laid down in Section 7 of the 2008 GBER, more general schemes have been put in place by some Member States, and these measures have been of key importance for subsidiz-

79 European Commission, State aid N 263/2007 – Germany (Saxony) – Saxon Early Stage Fund (Technology Founder Fund Saxony) [2008] OJ C93.

80 Recital 20 of the GBER stated that 'Transparent aid is aid for which it is possible to calculate precisely the gross grant equivalent ex ante without a need to undertake a risk assessment', and Article 5 lists categories of aid which are transparent as such (eg aid comprised in loans, aid comprised in fiscal measures).

81 In the case of investment funds targeting exclusively SMEs located in assisted areas, at least 30 % of the funding was to be provided by private investors.

82 Article 31(4) GBER.

83 European Commission, SA.32588 *Oberösterreichischer Hightechfonds* [2011] OJ C110.

84 European Commission, X77/2010 *Fondo Nazionale per l'Innovazione - Capitale di rischio* [2010] OJ C75.

ing accessible technology. Under the UK 'Technology Strategy Board Research, Development and Innovation scheme' numerous calls for funding AAL projects (together with other funding opportunity to design of technology-based products and services) were launched. The Bavarian scheme '*Hochtechnologien für das 21. Jahrhundert*'⁸⁵ supports research and development in the fields of life science, information and communication technology, microsystems technology, materials science, energy and environment, mechatronics, nanotechnology and process and production technology in accordance with information processing and information systems, and software development. Even though the scheme is not targeted to accessible technology, it is intended to subsidise the development of key components for communication systems, including microelectronics and innovative applications such as multimedia, or Intelligent Home Automation (which might fall within the broad group of accessible technology). In addition, the scheme unambiguously covers research and experimental development projects in the area of '*Gerontotechnologie*', innovative technologies for robotics in the nursing field, for accessible home automation and for other procedures and methods of preservation and enhancement of quality of life and independence.⁸⁶ Some schemes, communicated to the Commission under Article 31 GBER, aim to im-

prove of industrial research in the field of smart houses (which usually include AT).⁸⁷ This is the case of the Friuli Venezia Giulia '*Bando per la realizzazione di progetti di ricerca industriale nel settore della domotica*'.⁸⁸ Another interesting scheme is the German '*Einfach intuitiv - Usability für den Mittelstand*' devoted to improving usability of software.⁸⁹ The scheme was premised on the fact that the use of new application software for SME has grown in importance, and the user-friendliness and usability of products constitute an important quality criterion for software products and web applications. German authorities considered that there is substantial potential for enhancing usability, and identified this as an important 'success factor'. Usability is a concept related to accessibility, and does not in itself constitute accessibility. However, increasing usability broadly may also benefit people with disabilities.

IV. The New Horizontal Rules: A Tentative Discussion in Light of the UNCRPD

1. The New Guidelines for R&D&I and Risk Capital

As of 1 July 2014 new guidelines on aid to R&D&I have entered into force. As part of the SAM,⁹⁰ the Commission deemed it necessary to 'adjust' the scope of the previous framework, and better clarify the distinction between economic and non-economic activities of R&D&I, as well as to make the Guidelines a more flexible instrument and allow Member States to better support innovation.⁹¹ For this reason, after the mid-term review on the application of the current Framework for State aid for R&D&I in August 2011, the Commission launched a public consultation to gather Member States' and stakeholders input and views.

The new Framework elaborated by the Commission and published in May 2014 is complementary to the GBER,⁹² and aims to increase R&D spending, as well as 'facilitate the transition of knowledge and ideas to the market'.⁹³ Three features are potentially relevant. First, the Commission has opted again for a horizontal approach, so that the guidelines will apply in all sectors governed by the Treaty, and has attempted to leave to the Member States more flexibility for implementing R&D&I aid. Second, it has bet-

85 European Commission, SA.36232 Förderprogramm '*Hochtechnologien für das 21. Jahrhundert*' [2013] OJ C 213.

86 See at <<http://www.forschungsstiftung.de/index.php/Antragstellung/Foerderrichtlinien.html>> accessed 20.06.2014.

87 Smart houses are explicitly targeted to ameliorate the quality of life of people, especially vulnerable persons (presumably, elderly and people with disabilities).

88 European Commission, SA.29957 POR FESR 2007-2013 *Regione autonoma friulia giulia - attività 1.1.b - bando per la realizzazione di progetti di ricerca industriale nel settore della domotica* [2010] OJ C 9.

89 European Commission, SA.33226 '*Einfach intuitiv - Usability für den Mittelstand*' [2011] OJ C224.

90 See *supra* Section II.2, and n 41.

91 In its mid-term review, the Commission also affirms that the possibilities offered by the R&D&I Framework (and the GBER) have not been utilised by Member States to their full extent (see European Commission, 'Mid-Term Review of the R&D&I Framework' Staff Working Paper of 10.08.2011).

92 The scope of measures that no longer need to be notified to the Commission for prior approval has been widened under the new GBER. See *infra* Section IV.3.

93 European Commission, State aid: Commission adopts new rules facilitating public support for research, development and innovation; European Commission, Press Release IP/14/586 of 21.05.2014.

ter clarified the criteria for distinguishing between economic and non-economic activities (giving to the Member States more certainty on the instances in which public funding does not constitute State aid). The aid thresholds beyond which support would no longer be covered by the GBER, and would have thereby to be notified to the Commission, have been increased. Third, the R&D&I Framework has re-designed the limit of aid intensity, in particular, it allows, for individually notified measures, aid up to 70% of eligible costs for large companies and 90% for small companies.

However, the Commission has adopted a conservative approach, sticking to a vigilant economic appraisal: higher aid levels will be available only if there is a genuine financing gap, in order to avoid undue distortions of competition. This new framework again states that 'the general objective of R&D&I aid is the promotion of R&D&I in the Union'. Even though it is mentioned that R&D&I aid should contribute to the achievement of the Europe 2020 strategy of delivering smart, sustainable and inclusive growth, as in the previous framework, there are no other policy goals mentioned. The Commission has been quite indifferent to the point raised by some stakeholders involved in the consultation that preceded the enactment of the new framework, according to which R&D&I can hardly be conceived as an objective in itself, and, by contrast, has to be seen as a means to reach further social goals.⁹⁴

The Commission must certainly take into account the economic context in which a significant increase of aid would entail a risk of competition distortions, but should have probably acted more courageously and considered that State aid for R&D&I might be an important tool for reaching other strategic policy objectives and fulfilling societal needs, within the frame of the 'social market economy envisaged by the Treaty'⁹⁵. The promotion of the rights of people with disabilities through the development of accessible technology, as one of end goals that R&D&I schemes should adopt, could have been easily integrated in the guidelines. There are several arguments that might support this view. Besides the 'constitutional argument', it cannot be underestimated that increasing accessibility through new technologies is a commitment that the EU has undertaken at the international level by concluding the UNCRPD. Hence, a reference to accessibility, disability rights or even a general mentioning of the UNCRPD would have been in

compliance with the international obligation undertaken and the declaration of competence annexed to the concluding decision of the UNCRPD.⁹⁶ This declaration of competence, which indicates the areas in which the EU must implement the Convention, clearly indicates that State aid is an EU exclusive competence and (implicitly) affirms that this is a field in which the EU must act in view of implementing the Convention.

Up until now, State aid has been conceived as a valuable tool to increase employment of people with disabilities, but it has not been considered a worthy policy option in other respects. It must be acknowledged that neither the representatives of the AT industry nor the European Disability Forum (EDF), the biggest umbrella organisation representative of people with disabilities at the EU level, participated in the consultation. EDF, which actively took part in the consultation on the GBER and argued in favour of endorsing State aid to enhance the employment of people with disabilities, has not shown any real commitment to expand its action to other segments of State aid. Of course, this is not sufficient to justify the narrow economic approach of the Commission. However, EDF's lack of awareness of the potential of state aid exemplified the evident tendency to confine disability policy to certain areas, despite the 'mainstreaming disability' motto adopted in the EDS (and put forward by EDF itself long ago).

Overall, the purely economic approach, based on the existence of market failure and on the lowest level of distortion on competition and trade possible, as well as the absence of reference to social goals (or to the rights of people with disabilities), goes hand in hand with a renewed cautious attitude towards State aid. The Commission reminds the States that:

[T]here may be other, better placed instruments such as demand-side measures involving regula-

94 See: Answer of industryAll Europe to the consultation by the Commission on State Aid for Research, Development & Innovation (R&D&I), < http://ec.europa.eu/competition/consultations/2013_state_aid_rdi/index_en.html > accessed 20.06.2014

95 Article 3(3) TEU. For a discussion on this contested notion *ex pluribus* Semmelmann, 'The European Union's economic constitution under the Lisbon Treaty: soul-searching among lawyers shifts the focus to procedure' (2010) *European Law Review* 516, 521-22.

96 In compliance with Article 44 UNCRPD, the final decision on the conclusion of the Convention contains a Declaration of competence, specifying which areas of the agreement fall within the competence of the EU and which fall within that of its Member States, or are of shared competence between them.

tion, public procurement or standardisation, as well as an increase in funding of public research and education and general fiscal measures.

Therefore, the new Framework is not likely to incentivise Member States to increase public funding of R&D&I (in particular industrial research) on UD and AT, even though it does not discourage them to take the initiative to do so.

2. The New Risk Capital Guidelines

The Commission has also adopted new guidelines setting out the conditions under which Member States can grant aid in the form of risk capital. This Section cannot explore these new rules in detail, instead it highlights whether some of the changes introduced might lead to an even greater increase in established aid schemes to foster accessible technology in line with the UNCRPD. The new guidelines have an enlarged scope, now including SMEs and companies with a medium capitalisation (midcaps), and encompass a wider range of financial instruments, including equity, quasi-equity (already provided for the former 2006 guidelines), loans and guarantees. The Commission has also slightly redesigned the role and the weight of private investors, which is more tailored to the development stage and riskiness of the investment. In particular, the Commission intends to allow higher levels of public support to company-creation, where the private business finance markets are the most reluctant to provide the necessary financing. The new guidelines also lay down clearer conditions for tax incentives to investors.

The framework for assessing aid in the form of risk finance should, in the view of the Commission, help companies overcome the 'valley of death', when bringing new products and ideas to the market. This is particularly relevant for accessible technology production, since, as mentioned above, in the fields of

both universally designed technological goods and AT, industry is quite unwilling to engage in experimental products which require considerable costs. However, the guidelines lack of any reference to the UNCRPD, or to accessibility. Recalling the reflection carried out in the previous subsection, an allusion to the UNCRPD would comply with the international obligations undertaken and would possibly encourage Member States to finance accessible technology. Schemes like the German *HighTech Gründerfonds II*, that already financed enterprises producing accessible technology (mainly AT), would be more inclined to support R&D&I in this direction, and to encourage UD, which is still quite underdeveloped in the EU.

3. The new GBER

In light of the need to revise State aid policy frequently, the Commission limited the period of application of the former 2008 GBER until December 2013. It then prolonged its validity until July 2014, to allow the enactment of a new regulation.⁹⁷

The new GBER entered into force in July 2014 and is an integral part of the process of modernization. It aims to promote a sustainable, smart and inclusive growth. It also aims to confer to Member States more leeway in granting State aid without prior notification and approval by the Commission (provided that certain conditions are met). It significantly extends the possibilities for Member States to grant aid, but introduces *ex post* requirements (i.e. evaluation of large aid schemes and transparency on aid measures). The Commission has also included novel categories of aid: among them, it has explicitly crafted 'aid to innovation clusters and aid to process and organisational innovation'.⁹⁸ For the purpose of this analysis, it is worth noting that the scope of risk finance aid and R&D&I has been broadened. In respect to R&D projects notification thresholds are doubled, and the conditions for support for prototypes and pilot projects has been simplified. However, the Commission focuses on economic growth, rather than on the idea (and goal) of 'inclusive' innovation.

The GBER includes several references to accessibility, but not in relation to R&D&I or Risk Capital. A first general (and slightly unclear) reference to accessibility is provided for within the definition of aid to SME related to organisational cooperation (Article

⁹⁷ Commission Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty [2014] OJ L 187/1.

⁹⁸ Among the new categories there are also: aid schemes to make good the damage caused by natural disasters, social aid for transport residents of remote regions, aid for broadband infrastructure, aid for culture and heritage conservation, including aid schemes for audio-visual works, aid for sport and multifunctional recreational infrastructures, investment aid for local infrastructure.

2 para 63), while several references to accessibility are included in the new section dedicated to Aid for culture and heritage conservation (Articles 53 and 54). The GBER also includes references to the EDS, and to the UNCRPD (Preamble para 55). However, these references are linked, on the one hand, to the provisions on accessibility of cultural goods and heritage, and on the other hand, to the provisions on aid for disadvantaged workers and for workers with disabilities (which largely follow the previous ones included in the 2008 GBER), and for training for workers with disabilities. In this respect, the Commission claims to be ‘committed to defending the rights of workers with disabilities’.

Again, it must be noted that the lack of awareness of the importance of aid to R&D&I to foster accessible technology is not an exclusive feature of the Commission. The European Disability Forum (EDF) seems to have embraced the view that accessible technology must be boosted exclusively through imposing legislative obligations and standardisation, ie primarily through regulation of the ‘demand-side’. Surprisingly, very little attention is given to the supply side and to market incentives. EDF actively participated in the consultation on the GBER and has been described as one of the most influential civil society organisations at the EU level.⁹⁹ Nonetheless, in its response paper to the consultation,¹⁰⁰ EDF focused only on the section on aid to foster employment of people with disabilities, and in proposed amendments, mentioned technology merely with reference to an accessible work environment. No reference was made to the possibility of boosting R&D&I towards UD and AT. This is particularly astonishing, especially with regards to UD, which is deemed to be a priority for EDF. UD is well established only in architecture, but is relatively new and difficult to realise with regards to other technological goods (for example home devices). It is also quite hard to find universally designed technological goods on the market, and there would be the urgent need of R&D&I which could be sensibly incentivised through state aid.

V. Concluding remarks

The European Disability Strategy 2010-2020 has placed significant emphasis on improving accessibility and reducing fragmentation in the market of accessible goods and services. However, it has adopted

a relatively narrow view with regard to the tools that fit these purposes, and has prioritised the use of legislation and standardisation as the most suitable means to nudge the market in a more accessible direction. The ambitious project of a European Accessibility Act has been conceived as the ‘main road to walk through’. Though intrinsically seductive, this is a long term means, which should not prevent the EU adopting a more pro-active (or promotional) short term approach.

State aid has not been included in the toolbox of policy options available to the Commission (and the Member States) to improve accessible technology, and the lack of any reference to the use of State aid to foster innovation in the fields of UD and AT seems particularly astonishing. It is true that boosting the ‘supply-side’ of accessible technology, through public subsidies is only one side of the coin: there is the need of ‘demand-side’ action, which the Commission has already planned. Nevertheless, it would be essential to foster the supply side and overcome the ‘valley of death’ which is a common trend in both the UD and AT markets, as well as to enhance UD which is still a very *niche* market.

The analysis of the former R&D&I Framework and of the Risk Capital Guidelines and of their application has attempted to show that State aid has a great potential to shape the accessible technology market, and that this potential is still largely uncharted and overall underestimated. In doing so, the Commission seems also to have undervalued that, sometimes, universally designed products could functionally achieve other objectives (such as environmental goals). A recent report from the Irish Centre for Excellence in Universal Design (part of the Irish National Disability Authority) demonstrates that when examining the relationship between energy consumption and the design of In-Home Displays,¹⁰¹ the UD of these displays is important in ensuring that greatest number of consumers will be able to interact successfully with them and also achieve real economic gains and energy savings.

99 *Inter alia* Harcourt highlights how EDF contributed to shape EU disability policy (Harcourt, ‘Participatory Gains and Policy Effectiveness: The Open Method of Co-ordination Information Society’, (2013) JCMS 667, 674).

100 <<http://www.edf-feph.org/Page.asp?docid=31816&langue=EN>> accessed 30.10.2014.

101 The report is <<http://universaldesign.ie/Products-Services/Technical-Guidelines-for-in-Home-Displays/>> accessed 30.10.2014

The new R&D&I Framework and the Risk Capital Guidelines as well as the new GBER are also missed opportunities: the Commission sticks to a purely economic approach without giving significance to other policy goals, and certainly without making accessibility a relevant feature in the assessment of aid schemes. The Commission seems to fear that Member States engage in subsidy races, which are clearly harmful and endanger the maintenance of undistorted competition in the EU system.

Overall, the distinctiveness of EU State aid law governing R&D&I policy is still tied to the exclusive function of preventing distortions of competition. However, a less and better targeted aid policy as that embraced by the Commission may ultimately fall short of the obligation to create an accessible market that the EU has undertaken internationally, concluding the UNCRPD, and may be detrimental to the goal of 'inclusive innovation' envisaged by the EU 2020 Strategy.