

TOBII/SMARTBOX MERGER INQUIRY

**COMPLETED ACQUISITION BY TOBII AB (PUBL) OF SMARTBOX ASSISTIVE
TECHNOLOGY LIMITED AND SENSORY SOFTWARE INTERNATIONAL LIMITED
INITIAL SUBMISSION BY TOBII AB (PUBL) FOR PHASE 2 REVIEW**

A. INTRODUCTION

1. Tobii AB (publ) (“**Tobii**”) welcomes the opportunity to engage with the CMA’s Inquiry Group and its Phase 2 staff in respect of its completed acquisition of Smartbox Assistive Technology Limited (“**SATL**”) and Sensory Software International Limited (“**SSIL**”) (together, “**Smartbox**”) (“**the Transaction**”). This submission is made in response to the letter of 8 February 2019 from the CMA Panel Chair to Tobii, requesting Tobii to comment on the CMA’s Phase 1 decision of 25 January 2019 to refer the Transaction for a Phase 2 review (“**the Decision**”).
2. In this Initial Submission, Tobii provides its initial observations on why the Transaction has not and will not result in a substantial lessening of competition (“**SLC**”) on any relevant market in the United Kingdom relating to the provision of augmentative and alternative communication (“**AAC**”)¹ hardware, software and solutions and eye-gaze cameras. Tobii will supplement this submission in its response to the CMA’s Issues Statement, which was published on 26 February 2019, including with the provision of additional evidence. For the avoidance of doubt, Tobii reserves its position on whether the relevant markets have been properly defined or if there is, in reality, a properly defined and antitrust-relevant AAC market in the UK. It should be noted that the term ‘complex needs’ (which the CMA uses in its market definition) should refer to complex *communications* needs (i.e. the inability to speak, whether at all or properly) and does not refer to complex *access* needs.
3. Tobii was disappointed that the CMA decided to refer the Transaction for a Phase 2 review. It is confident that, once the CMA’s Inquiry Group has been able to consider all the evidence and to understand the products that the parties provide and the markets in which they operate, it will conclude that the Transaction will not substantially lessen competition, whether as a result of

¹ The term ‘assistive technology for communication’ (or “**ATC**”) may also be used in the industry, but this submission shall, as did the CMA’s Phase 1 decision, use the acronym ‘**AAC**’.

horizontal unilateral effects or vertical foreclosure. Indeed, the Transaction will provide numerous benefits for customers and end-users.

4. Tobii emphasizes that its rationale for acquiring Smartbox was to bring together two largely complementary businesses in order, in a market in which competition will only increase as technology platforms (such as Apple and Microsoft) continue to expand their assistive technology capabilities, to combine the parties' respective skills and expertise (Tobii in hardware, geographic reach and customer service, and Smartbox in software and customer service) so that the merged business will be able to continue to innovate in developing new products that will give more people with communication disabilities a voice, both in the UK and around the world. In that way, the merged business will continue the parties' respective missions of "*helping more people do what they once did or never thought possible*" (Tobii Dynavox) and "*providing technology and support that effectively gives people with complex disabilities a voice and independence*" (Smartbox). Its rationale was not to increase prices, reduce output, limit customer and end-user choice or to reduce innovation.
5. The AAC sector and the eye-tracking sector are both nascent sectors, in which existing market penetration is low and unmet demand is high, with significant growth in demand foreseen in the coming years. In assessing the effects of the Transaction on competition, the CMA must take due account of the dynamic nature of competition in these sectors and not, as it has in the Decision, undertaken an essentially static analysis. Product development in both sectors is fastmoving and, in addition to those with a specific focus on them, 'big tech' companies (such as Apple, Microsoft, Google and Facebook) are devoting substantial resources to developing both access solutions and eye-tracking technology. This will expand the range of products available to those with speech, communication and access disabilities, with consumer tablets² and other consumer electronics products become ever more suitable devices for an increasing number of users of AAC technology.
6. The Transaction will not lead to an SLC as a result of horizontal unilateral effects, as:
 - 6.1. the parties' activities are substantially complementary in AAC software and there will remain numerous other providers of AAC software;
 - 6.2. the correct relevant frame of reference for what the CMA has described as the

² For clarity, the use of terms 'consumer tablets' and 'tablets' refers to any form of tablet device, including those running the Apple iOS operating system (such as an iPad or iPad Pro), Windows operating systems (such as Microsoft Windows Surface Pro) or the Android operating (such as Samsung Galaxy tablets).

‘downstream’ market is AAC solutions (and not ‘dedicated AAC solutions’). On this market, the merged entity will continue to face significant competition from AAC solutions delivered using either consumer electronics products (such as tablets) or dedicated devices, as solutions delivered using tablets meet the requirements of an increasing number of users of AAC solutions and impose a significant and effective competitive constraint on solutions based on dedicated devices. This constraint has already resulted in both technical improvements and lower prices for AAC users and is likely to increase significantly as the assistive technology capabilities of tablets continue to be enhanced; however,

- 6.3. even if the relevant frame of reference would be defined as ‘dedicated AAC solutions’ no concerns would arise, as: the parties were not particularly close competitors; [REDACTED]; the merged entity will continue to face significant and effective competition from numerous other competing suppliers of ‘dedicated AAC solutions’, the number and competitive significance of whom does not appear to have been properly appreciated by either the CMA or customers to which it has spoken in Phase 1; and it will also continue to face significant competitive pressure from AAC solutions delivered using mainstream consumer electronics products, which will exert an increasing level of both technical and pricing pressure on suppliers of ‘dedicated AAC solutions’.
7. In addition, the Transaction will not lead to an SLC as a result of vertical foreclosure under any theory of harm. Even if Tobii Dynavox were to have the ability and incentive to engage in input or customer foreclosure strategies (which it is not accepted would be a result of the Transaction), this would not result in rivals being foreclosed, as they would continue to have viable alternative inputs (as there will remain other credible suppliers of AAC software and eye-gaze cameras) and customers (as AAC solutions represent a very small proportion of demand for eye-gaze cameras).
8. Whilst the Transaction will not result in an SLC on any properly-defined market, there are important countervailing factors that the CMA has not, so far, properly taken into account:
 - 8.1. The Transaction will result in significant efficiencies and other benefits for consumers. In particular, amongst other benefits, it will enable the enlarged Tobii Dynavox/Smartbox business to focus its R&D resources (both financial and human) on developing new products for end users with communication disabilities that neither would have been able to develop individually absent the merger, [REDACTED].
 - 8.2. The NHS is the preponderant purchaser of AAC solutions in the UK for more

‘complex’ needs and it clearly has buyer power, including to choose which solutions it will fund and to impose price caps.

- 8.3. For any provider of AAC solutions that is not presently active in the UK, barriers to entry are low: all that will be required is to establish a UK-based sales and customer support function or to use a distributor or reseller. Tobii Dynavox and Smartbox each has UK sales and customer support teams of around 10 people. There are no regulatory barriers or localisation requirements.
9. The remainder of this submission is set out as follows:
 - 9.1. Section B provides background to the Transaction.
 - 9.2. Section C considers the frame of reference for analysing the Transaction, including market definition.
 - 9.3. Section D explains why the Transaction will not have negative effects on competition as a result of horizontal unilateral effects.
 - 9.4. Section E explains why the Transaction will not have negative effects on competition as a result of vertical foreclosure effects.
 - 9.5. Section F sets out the efficiencies and other customer benefits that Tobii expects to deliver a result of the Transaction.
 - 9.6. Section G sets out Tobii’s conclusions on why the CMA should clear the Transaction unconditionally.

B. BACKGROUND

The parties

10. Tobii is a Swedish public company, listed on the Nasdaq Stockholm Exchange. In 2017, its global turnover was SEK 1,084 million (£90.3 million) and its UK turnover was SEK 27 million (£2.3 million).³ It has approximately 1,000 employees (of whom one-third are in R&D), working across three distinct business units:⁴

³ Of this, Tobii Dynavox represented SEK 713 million (£59.4 million) (worldwide) and SEK [§] (UK). Tobii has not yet reported its results for the year to 31 December 2018.

⁴ Following a corporate reorganization that took place on 1 January 2019, each business unit was established as a separate wholly-owned subsidiary of Tobii AB (publ), each of which continues to have its own profit and loss account and is responsible for its own research and development activities: Tobii Tech AB, Tobii Dynavox AB and Tobii Pro AB.

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- 10.1. *Tobii Tech*, which develops and sells eye-tracking technology for integration (by OEMs) into consumer electronics and other volume products, such as computers, computer games, virtual and augmented reality products, mobile phones and cars, as well as many niche applications, including in the medical, industrial and law enforcement sectors;
 - 10.2. *Tobii Dynavox*, which develops and sells a wide range of products for assistive technology for communication that are used by people with a wide range of communication disabilities, which includes (for some end-users, who cannot physically access or control a device) eye-tracking technology that it has either developed itself or acquired from Tobii Tech on an arm's length basis; and
 - 10.3. *Tobii Pro*, which develops and sells eye-tracking solutions and services (which it has either developed itself or acquired from Tobii Tech on an arm's length basis) used to study human behaviour and optimize a wide range of activities from product design to marketing and work processes in fields as varied as product design, marketing and work processes.
11. Smartbox consists of two companies (SATL and SSIL) that were, prior to completion of the Transaction on 1 October 2018, under the common ownership and control of the Hawes family. Smartbox was primarily a developer of AAC software, which it either sold directly to end users (through downloads), licensed to suppliers of AAC solutions or (as a reseller) installed on Tobii Dynavox devices resold by it. From 2015, it also installed this software either on standard consumer tablets that it fitted with accessories and durable cases and resold or (from July 2018) on purpose built devices developed and sold by it.
 12. Smartbox's global turnover in 2017 was £9.3 million (2016: £9.8 million), of which £4.8 million (2016: [REDACTED]) was in the UK.

The Transaction

13. Tobii and Smartbox have had a long-standing business relationship. Between 2006 and January 2017, Smartbox had been a reseller in the United Kingdom of Tobii Dynavox eye-gaze cameras, AAC hardware and AAC software. With effect from 2 January 2017, Tobii Dynavox terminated this reseller relationship as [REDACTED]. Since 2013 Tobii Dynavox has been licensed to install on its own hardware and to resell Smartbox's AAC software.
14. [REDACTED].

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15. Termination of its reseller agreement with Tobii caused [REDACTED]. Accordingly, in October 2017, the Hawes family approached Tobii with a view to re-establishing collaboration between the parties. In December 2017, the parties discussed this (which was also of interest to Tobii Dynavox, as [REDACTED]⁵) and also a potential acquisition by Tobii of Smartbox. Negotiations and discussions on a possible acquisition continued in 2018. On 6 May 2018, Tobii made an indicative offer to acquire Smartbox. Due diligence took place in June 2018. Following further negotiations, on 20 August 2018, Tobii and the Hawes family entered into a Sale and Purchase Agreement pursuant to which Tobii would acquire 100% shareholdings in each of SATL and SSIL, for an initial consideration of £11 million, plus a contingent ‘earn out’ of up to £1 million.
16. Completion of the Transaction took place on 1 October 2018. Pursuant to an Initial Enforcement Order dated 28 September 2018 and an Interim Order dated 18 February 2019, Tobii and Smartbox have been held separate since completion.

The rationale for the Transaction

17. Tobii Dynavox’s mission is to provide world-class software, devices and customer support to users with a range of disabilities that prevent them from communicating effectively, whether as the result of a congenital or acquired at birth disability (such as cerebral palsy, Down’s syndrome, autism or brain damage) or a disability caused by disease or accident (such as paralysis, multiple sclerosis or motor neurone disease).
18. Tobii’s rationale for acquiring Smartbox was to expand and complete its portfolio of AAC products, by combining two largely complementary businesses, Tobii Dynavox being focused primarily on hardware and Smartbox being focused primarily on software. By combining the parties’ respective R&D and innovation capabilities, the merged entity will better focus its resources on developing improved and new hardware and software products (that neither could develop individually, due to resource constraints), thereby enabling the merged business to give more people with disabilities a voice.
19. Tobii Dynavox will not reduce its R&D activities as a result of the Transaction. It will remove duplication between, and refocus, the R&D activities of both parties, by focusing software development on the legacy Smartbox business and hardware development on the legacy Tobii

⁵ [REDACTED].

Dynavox business, reflecting the parties' core competencies. However, this will increase (and not reduce) the overall level of innovation and investment in R&D, by refocusing the parties' R&D activities [REDACTED]

Counterfactual

20. In its Decision, the CMA considers that the appropriate counterfactual is the situation prior to Tobii and Smartbox entering into new reseller agreements in August 2018. Tobii considers that these agreements were not (as the CMA considers) related to the Transaction, but were entered into between the parties in the ordinary course of business.⁶ However, irrespective of whether the appropriate counterfactual takes account of these agreements, the Transaction will not result in an SLC on any market.
21. Whilst [REDACTED]. Smartbox was a small business, with a turnover in 2017 of approximately £9.3 million (2016: £9.8 million). [REDACTED]
22. [REDACTED].

C. THE FRAME OF REFERENCE FOR ANALYSING THE CONCENTRATION

23. AAC technology (whether hardware, software, or solutions combining the two) is used to enable end-users (who have limited or no speech) to communicate. The requirements of individual end-users vary considerably, from the less complex to the highly complex, whether in terms of their communication disability and/or any physical disability that may prevent them physically using a communication device or the software installed on it. Solutions for end-users are thus highly individualised.
24. The range of users of AAC technology includes:
 - 24.1. users who are non-verbal from birth due to a congenital disability or one acquired at birth, such as cerebral palsy, Down's syndrome, Rett's syndrome, autism or other brain damage or intellectual disability;
 - 24.2. users who have a communication disability caused by disease or accident, such as paralysis, multiple sclerosis, motor neurone disease (or ALS) or stroke (aphasia); and

⁶ [REDACTED]

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- 24.3. in approximately 10% of users, a physical disability that means that they have no or limited motor skills and therefore additionally require assistance in physically using a device.
25. In the Decision, the CMA identifies distinct markets for:
 - 25.1. ‘dedicated AAC hardware’ (worldwide in scope);
 - 25.2. ‘AAC software’ (worldwide in scope);
 - 25.3. ‘eye-gaze cameras’ (worldwide in scope); and
 - 25.4. ‘dedicated AAC solutions’ (UK-wide in scope).

‘AAC hardware’

26. Tobii disagrees with the CMA’s approach to market definition in relation to ‘dedicated AAC hardware’.
27. There is not, in reality, a standalone market for ‘AAC hardware’: customers and end-users do not generally purchase AAC hardware as a standalone product: they purchase AAC *solutions*, made up of hardware, software and peripherals, which may be supplied as an integrated product, as a ‘bundle’ of products or on a standalone basis (including where software is downloaded on to the user’s existing device). Whilst some sales of hardware are made through resellers and distributors (some of whom may add additional peripherals or software), that hardware will be sold under the brand name of the manufacturer: thus, for example, where Tobii Dynavox sells an AAC solution based on one of its devices through a reseller or distributor, the product will remain branded with Tobii Dynavox’s brand. AAC hardware is therefore not supplied as an ‘intermediate’ or standalone product in a vertical supply chain.
28. In addition, the CMA has ignored the important role, both in meeting user’s needs and in terms of competition, played by tablets as a platform for delivering AAC solutions that meet the AAC requirements of individual end-users. As the CMA accepts, end-users have a broad range of AAC requirements. Whilst some may have more demanding requirements (whether in relation to their speech/language communication or physical (access) disabilities), many others do not. For example, only approximately 10% of users require an AAC solution that includes an eyegaze camera (which can, in any event, be incorporated into a solution as an external peripheral, using a USB connector). For many users, a standard consumer tablet, or a device based on a standard consumer tablet, will – with the correct software and perhaps also peripherals – meet their requirements. Therefore, once this is understood and taken into account,

it becomes clear that consumer tablets are an alternative hardware platform for the delivery of AAC solutions and therefore impose a competitive constraint on purpose built (or ‘dedicated’) devices.

29. In its recent report, *Assistive Technology*,⁷ the House of Commons Work and Pensions Committee highlighted that consumer electronics products (such as, but not only, tablets) are increasingly suitable for assistive technology solutions, and are often cheaper and just as effective in meeting users’ needs. The Committee observed the following:

*“‘Assistive Technology’ once meant expensive, specialist equipment. Today, AT is increasingly mainstream, often as technology primarily designed for the convenience of all. It is integrated in everyday computers, phones and gadgets. It helps disabled people make phone calls, send emails and texts, and access the internet – all on technologies they often already own. The Apple iPhone alone contains a host of AT features as standard. VoiceOver reads out text from the screen on command, aiding visually impaired people. FaceTime enables remote visual communication such as British Sign Language (BSL). Switch Control controls the phone without touch; an invaluable option for people with motor disabilities. At no additional cost, these technologies open up work and society.”*⁸ (emphasis applied)

*“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.”*⁹ (emphasis applied)

30. Whilst the Committee was examining the role of AT in getting disabled people in to work, and was not considering specifically those with communication or access disabilities, its observations and recommendations are equally applicable in the AAC sector, including for the NHS (which is the preponderant purchaser of AAC solutions in the UK): mainstream technology companies (such as Apple, Google, Microsoft and Samsung) are increasingly

⁷ House of Commons Work and Pensions Committee, *Assistive Technology* (19 April 2018) (HC 673).

⁸ *Ibid.*, page 3.

⁹ *Ibid.*, page 4.

producing their own assistive technology and their platforms (including tablets and smartphones) can be used for a wide range of AAC solutions. Specialist technology, such as eye-tracking software is often bolted-on to existing IT.¹⁰ As the Committee observed:

*“These developments are making AT more accessible and inclusive than ever before. This is partly because they are much cheaper than traditional AT. Specialist, bespoke products can be very expensive... in contrast, mainstream AT often incurs little or no additional cost beyond the cost of the device or computer, which many people will already own.”*¹¹ (emphasis applied)

31. This is consistent with how those procuring AAC solutions are expected to undertake their procurement. According to NHS England guidelines for the commissioning of AAC equipment by specialised AAC services (also known as ‘NHS hubs’), which serve those members of the AAC community with the most severe or complex communication disabilities:

*“Communication aids provided by specialised commissioning arrangements may be based on mainstream technology, such as tablet computers, or more dedicated hardware. They will include specialist communication software (that takes a user’s input and outputs synthesised speech); vocabularies or language systems loaded into the software; and accessories (such as access methods, speakers, etc.).”*¹² (emphasis applied)

32. Tobii Dynavox’s experience of the assessment of an individual user’s needs, whether by the NHS (including the NHS ‘AAC hubs’ that deal with users with the most complex AAC needs that qualify for centralised funding by NHS England), other funding bodies and self-funding users, is that all products and solutions are considered in the assessment process. The NHS’s objective is to provide the right, tailored, solution to the patient or user using all available tools, including ‘mainstream’ consumer devices such as iPads and Android and Windows tablets, for which there are dozens, if not hundreds of apps for even the most complex AAC needs.

¹⁰ *Ibid.*, page 11.

¹¹ *Ibid.*, page 10.

¹² NHS England, *Guidance for commissioning AAC services and equipment* (2016), available at: <https://www.england.nhs.uk/commissioning/wp-content/uploads/sites/12/2016/03/guid-comms-aac.pdf>, page

33. This is also consistent with how resellers already market tablets, with the option to download software alongside dedicated AAC hardware.¹³
34. All of the major technology platforms are constantly investing substantially in R&D to develop ways in which people can interact more effectively with computers, by improving on what is seen as an old-fashioned screen and keyboard/mouse interface, in large part to continuously improve the accessibility of their products. They are aggressively developing the operating systems for smartphones, tablets and laptops/PCs in a way that is embracing within the operating system increasingly sophisticated assistive technology, including – but not only – eye-tracking. This reflects that eye-tracking technology is becoming mature (from a technology perspective, if not in its commercial exploitation) and therefore will, as it is adopted in mass consumer electronics products, become commoditised, with increasingly intense competition from multiple suppliers.
35. Major technology companies R&D activities in the field of accessible technology includes, but is in no way limited to, the following::
- 35.1. Microsoft and Apple each have websites specifically dedicated to addressing accessibility.¹⁴
- 35.2. Microsoft hosts an annual Assistive Technology summit to which key partners (including Tobii Dynavox, Smartbox and other providers of AAC solutions) are invited.
- 35.3. Google is a major player in artificial intelligence and in 2016 it acquired EyeFluence, a strong start-up business in the eye-tracking sector. It also has a large portfolio of patents for eye-tracking and is likely to include it in its future products.
- 35.4. Apple's iOS operating system has a comprehensive set of native accessibility features that make it an ideal platform for users who need assistive technology to make use of a tablet computer. As early as 2011, the iPad supported Proloquo2go, a leading and

¹³ See, for example, the website of Inclusive Technology, at: <http://www.inclusive.co.uk/hardware/communicators-and-controllers>

¹⁴ See <https://www.microsoft.com/en-gb/Accessibility>, <https://www.apple.com/accessibility/ipad/> and <https://www.apple.com/accessibility/mac/>.

widely used symbol-based AAC app developed by AssistiveWare.¹⁵ Eye tracking functionality is currently embedded in Apple's iPhone X. The 3D cameras of the newest iPad Pro's allow users to access the iPad via head-pointing and eye-tracking; this will, with further development, support the delivery of assistive technology (including AAC solutions) on iOS and OS X tablets. In addition, eye-tracking is also available to developers on the iPhone and Apple recently acquired a leading eyetracking developer, Sensomotoric Instruments (SMI). Apple will continue to develop the eye tracking functionality of the iPhone and iPad/iPad Pro, such that within a few years iPhones and iPads will feature high-quality eye-tracking that will be a very attractive alternative for many users in need of eye-tracking AAC solutions.

35.5. Microsoft is also already including eye-tracking with its current generation products¹⁶ and can be expected to include eye-tracking as a key component in its consumer devices. Microsoft has also integrated access solutions, including 'Eye Control' (which enables a user to control a Windows PC or tablet using their eyes) for disabled users into its Windows 10 operating system and its Microsoft Office software, which makes any tablet or PCs using the Windows 10 operating system a viable eye-gaze-based AAC solution for many users. The Microsoft Eye Control software is a very strong competitor to some of the software made by either Tobii Dynavox and Smartbox and comes free of charge with every copy of Windows 10.

35.6. At this year's Mobile World Congress, in February 2019, Microsoft announced HoloLens2, a new device that incorporates Microsoft's own eye-tracking technology; this is a technology that can increasingly be expected to be included as part of Microsoft's other offerings worldwide. This development [👁️] provides a major signal from a major technology platform that eye-tracking technology has a strong future.

35.7. Samsung has also included a form of eye-tracking in its Galaxy smartphones. It also has a substantial portfolio of patents related to eye-tracking.

35.8. [👁️].

¹⁵ In 2011 Steve Jobs featured Proloquo2go in his keynote address, making it a focal point during the introduction of the iPad 2: see <https://www.mobihealthnews.com/10335/dr-john-halamka-endorsesapple-ipad-at-ipad-2-launch-event>.

¹⁶ For example, in 2018 Microsoft added eye control as a basic HID (Human Interface Device) standard, making it the 5th input method (following keyboard, mouse, touch screen and pen). This makes any Windows 10 tablet capable of easily adding eye control as a way to access the Windows environment, by adding a commercially available eye-tracking peripheral with a USB connector. Tobii Tech and EyeTech, both eye-tracking hardware manufacturers, worked with Microsoft to develop this open standard.

36. Tobii agrees with the CMA that, to the extent that there is relevant market for hardware, it would be global in scope.

‘AAC software’

37. Tobii agrees (for the purposes of the CMA’s inquiry) there is likely to be a distinct market for ‘AAC software’ (given that it is licensed to resellers and providers of AAC solutions and can also be downloaded by customers and end-users), which is global in geographic scope. However, it is important to note that there are many different types of software for users of

AAC technology, each performing or facilitating a distinct function. Therefore, a market for ‘AAC software’ is clearly a market for highly differentiated products. It should also be noted that software that is pre-installed by a device manufacturer (in particular in its operating system, whether Apple iOS, Microsoft Windows or Google Android) may in itself already provide a degree of assistive technology that meets some or even all of the communication or access needs of individual AAC users, without the need for additional specialist AAC software or apps.¹⁷

‘Eye-gaze cameras’

38. Tobii agrees (for the purposes of the CMA’s inquiry) that there is a distinct market for eye-gaze cameras and that this market is worldwide in scope. It emphasises, however, that this market comprises eye-tracking cameras for all applications, such as consumer electronics, gaming, virtual reality and augmented reality, vehicles and a wide range of niche solutions, including AAC solutions, medical assessments and robotic surgery devices.

39. There is not a distinct market for eye-gaze cameras for AAC solutions, which share the same eye-tracking technology (including algorithms and sensors) as eye-gaze cameras used in PC gaming and several other niche applications (including robotic surgery and medical assessments). Tobii Tech has made very substantial investments in developing eye-tracking technology.¹⁸ It would not be possible to recover this investment in R&D if eye-gaze cameras were to be used only for niche applications, including AAC solutions (for which only a very

¹⁷ All devices used by AAC end-users, including purpose built devices, are essentially either a tablet or a computer. For example, Tobii Dynavox’s and Smartbox’s devices are based on standard tablets or PC components that run the Windows 10 operating system.

¹⁸ Tobii Tech has, in recent years, invested very substantially into R&D to develop its core eye-tracking technology, which can only be recovered by selling very large numbers of devices containing eyetracking technology, which requires its large scale adoption in mainstream consumer electronics products, such as PC gaming and virtual reality/augmented reality devices. This investment would not have been made, and could not be recovered, specifically to develop eye-tracking technology for AAC solutions or any other niche, low volume, product.

limited number of eye-gaze cameras are used).¹⁹ Thus, the use of eye-gaze cameras for AAC solutions (and also the niche applications served by Tobii Pro or Tobii Tech) is entirely due to investment in developing eye-tracking technology and cameras for large-volume and mainstream use in consumer electronics devices, which use the same technology as is used for AAC solutions.

‘AAC solutions’

40. Tobii disagrees with the CMA’s approach to market definition in relation to what it considers to be ‘dedicated AAC solutions’. Whilst the CMA correctly observes that a customer or enduser of AAC technology will generally purchase a bundled ‘solution’ of hardware, software and peripherals/accessories, the CMA has understated the important role, both in meeting user’s needs and in terms of competition, played by tablets as a platform for delivering AAC solutions, either on a standalone basis, or with additional software (or apps) or peripherals. The importance of tablets, both in meeting users’ needs and as a competitive constraint, is considered below in more detail.
41. It would appear that, in the Decision, the CMA has made an overly simplistic distinction between what it considers (but does not define) as ‘complex’ and ‘less complex’ needs. As NHS England’s own guidelines make clear, there is a continuum of AAC needs: the needs of even many of those who are eligible for funding by the NHS ‘AAC hubs’ can be met by a range of solutions, including those provided using a consumer tablet. NHS therapists (and others funding AAC solutions) will make their decision on (i) what solution is to be adopted for an individual user based on what solution will best meet that individual’s needs, taking account of their disability and lifestyle and (ii) given budget constraints, price. This will involve an assessment of those needs and sometimes a trial of different possible solutions, using combinations of hardware and software. The decision will be taken by the therapist.
42. Accordingly, there is not a distinct market for ‘dedicated AAC solutions’, but merely one for ‘AAC solutions’, which may be delivered using different combinations of hardware, software and peripherals, depending on the precise needs of an individual end-user.
43. Tobii agrees that the relevant market for the supply of AAC solutions, whether to immediate purchasers (such as the National Health Service, charities or schools) or directly to end-users, will be national in scope.

¹⁹ Only approximately 3% (by number of units sold) of eye-gaze cameras sold by Tobii Tech are used for AAC applications; this includes cameras sold to Tobii Dynavox.

Medical grade and non-medical grade AAC hardware and AAC solutions

44. Whilst some AAC hardware (and thus AAC solutions based upon it) may be classified as ‘medical grade’ (in that it meets the regulatory requirements for being classified as a medical device), it is not necessary for the CMA to determine whether there are distinct markets for ‘medical grade’ and ‘non-medical grade’ AAC hardware and solutions.²⁰

D. THE TRANSACTION WILL NOT GIVE RISE TO HORIZONTAL UNILATERAL EFFECTS ON COMPETITION

45. In the Decision, the CMA considers that the Transaction will result in an SLC due to horizontal unilateral effects in relation to dedicated AAC hardware, AAC software and dedicated AAC solutions, for the following reasons:

- 45.1. the parties have high combined shares of supply;
- 45.2. the parties are close competitors, including in relation to innovation;
- 45.3. the parties face limited competitive constraints from competitors; and
- 45.4. consumer tablets do not impose a competitive constraint on the parties.

46. Tobii respectfully disagrees with the CMA’s analysis, for the reasons set out below.

The AAC sector

47. The AAC sector remains, globally, at a nascent stage in its development. Penetration levels remain very low, both globally and in the UK. It is estimated that only approximately 1% of those with communications disabilities presently use assistive technology to enable them to communicate. Whilst, in the past, users would have generally used hardware that was specifically designed for an AAC solution, due to the lack of any other alternative (consumer tablets not then existing), increasingly other hardware solutions can be used for even more complex communication and access disabilities. These hardware solutions include smartphones, consumer and industrial tablets (including but not only the iPad and iPad Pro, and the Microsoft Surface Pro) and PCs.

²⁰ However, it is important to note that the ‘medical grade’ devices supplied by Tobii Dynavox are designed to comply with medical device specifications (which are mandatory in order to obtain reimbursement (from a health system or an insurer) for AAC devices in certain countries, in particular the United States), which imposes additional production and compliance costs and also involve significant on-going customer service and support costs, which are included in the sale price of the device. Although AAC devices do not need to comply with medical device specifications in the UK, these models are made available in the UK as part of Tobii Dynavox’s product range.

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48. As explained above (see paragraph 41), end-user demand for AAC solutions is dependent on the variety of communication and physical disabilities that an end-user may have, in terms of both the disabilities that they have and their severity, as well as the end user's age and language competency. Therefore an end-user (or the medical professional who is assessing their AAC requirements) will consider various combinations of hardware, software (whether for communication, literacy or language learning), peripherals (such as eye-gaze cameras, joysticks, mice and speakers) and accessories (such as cases and wheelchair mountings).
49. Tablets (whether consumer or industrial) and smartphones are already widely used for AAC solutions and this is expected to increase in the future. Only a very small proportion of users require sophisticated purpose-built devices, which either encapsulate a standard consumer tablet or use standard commercially available components (i.e. screen, processor and printed circuit boards) that use a commercially-available operating system (usually Windows). Thus, devices such as smartphones, iPads, other tablets and PCs/laptops (such as Microsoft's Surface Pro) are being used for AAC solutions, either with or without specialised AAC software. Many manufacturers (including, but not only, Saltillo, Prentke Romich (PRC), Logan Technologies and Forbes AAC) produce accessories for consumer tablets to increase their ruggedness (by using a foam, rubber or plastic case) or functionality (for example, by adding improved speakers or incorporating an eye-tracking device). Indeed, this was the approach taken by Smartbox, when it introduced a range of 'wrapped' tablets that were based on a standard consumer tablet computer, with additional software and peripherals/accessories added before it was delivered to the end-user.
50. As explained above (see paragraphs 26 to 34), the use of tablets and other consumer devices will continue to accelerate as Apple, Microsoft, Google, Samsung and others (including tablet and PC manufacturers) continue to improve the durability, functionality and accessibility of their devices, so that they can be used to meet the requirements of ever more users of AAC technology.
51. Tobii therefore considers that, in the Decision, the CMA has failed to understand and take proper account of the widespread use of consumer tablets and native operating system accessibility support in delivering AAC solutions and has therefore seriously under-assessed the extent of the competitive constraints to which the merged entity will be subject.
52. In order to meet the requirements of the end-users of AAC technology, Tobii Dynavox has developed three different product segments, which address different price points and technical sophistication. These are set out in **Figure 1** below.

Figure 1 Tobii Dynavox product segments

[X]

53. Regardless of the product segment, the software used in each segment is identical. In addition, the products in the ‘mid-range’ and ‘medical grade’ segments are both based on tablets running Windows software and are manufactured by contract manufacturers of electronics products, which manufacture devices for both consumer and specialist uses.
54. The three segments may be summarised as follows:
 - 54.1. ‘*software only*’: the customer or end-user downloads the Tobii Dynavox software directly to a device, such as a mobile phone, tablet or PC, for example from Apple’s Appstore, Microsoft’s Windows Store or Tobii Dynavox’s website. This is priced in the range of approximately £50-450, depending on the software and the basis on which it is sold (e.g. monthly subscription or full download allowing unlimited use).
 - 54.2. ‘*mid-range*’: this product is either a case (into which a consumer tablet can be fitted) or a device that is purpose built or adapted for communication from a standard ‘off-the-shelf’ Windows tablet. [X] This is priced at approximately £800 - £3,000, depending on its functionality. The devices run the same software and have the same technical capability as a ‘medical grade’ device, and whilst more rugged than a consumer tablet, will not be as rugged as a ‘medical grade’ device.
 - 54.3. ‘*medical grade*’: this product has the same computing capability and runs the same software as a ‘mid-range’ product, but is designed and purpose-built to meet the regulatory requirements for medical devices. It is rugged (including resistance to being dropped) and is certified as a medical device. Some models also have built in access solutions (such as an eye-tracker and switch ports), built-in environmental control solutions and an extended battery life. Users are also provided with an extended warranty and life-time support, including assessment and training, each of which are included in the sale price.
55. Similarly, Smartbox’s ‘Grid’ software is available both on a range of different devices (whether those of Smartbox, or third party devices, including those of Tobii) and for download for the iPad.
56. Tobii Dynavox considers that growth in demand for AAC solutions will be focused on the

‘software only’ and ‘mid-range’ segments. This is demonstrated by **Figures 2 and 3** [REDACTED].²¹ [REDACTED] This is due to two factors: the ever-increasing capabilities of consumer tablets and PCs (including better ruggedization, improved speaker technology, longer battery-life, improved assistive technology features in the operating systems and the integration of eye-tracking), which enable ever more complex communication and access needs to be met using tablets (whether consumer or industrial tablets) and continuing budget pressures on both funding agencies (such as national health systems and medical insurers) and privately-funded users.

Figure 2 Expected developments in demand for touch AAC solutions

[REDACTED]

Figure 3 Expected developments in demand for eye-tracking and access AAC solutions

[REDACTED]

57. As is explained below, there are numerous competitors to the parties for each of software, ‘midrange’ devices and ‘medical grade’ devices.²²

AAC software

58. There are numerous developers of specialist software (or apps, for tablets and smartphones) that is used for AAC solutions. Both Tobii Dynavox and Smartbox develop AAC software. As has been explained above (see paragraphs 34 and 37), software that is pre-installed by a device manufacturer (in particular in its operating system, whether Apple iOS, Microsoft Windows or Google Android) may in itself already provide a degree of assistive technology that meets some or even all of the communication or access needs of individual AAC users, without the need for additional specialist AAC software or apps.

59. Smartbox’s principal software product is ‘Grid 3’. This is installed on both Smartbox’s hardware and that of third parties, including Tobii Dynavox. It is also available (as ‘Grid for iPad’) for download on to iPads and other devices using the Apple iOS operating system. ‘Grid’ is widely recognised as a comprehensive AAC software solution. Smartbox also provides a number of other AAC software products: ‘Super Core’ (designed for those using AAC technology for the first time), ‘Look 2 Learn’, ‘Look 2 Learn Scenes and Sounds’ and ‘Look 2

²¹ [REDACTED]

²² Tobii is preparing a more comprehensive review of competitors, which will be provided to the CMA when complete.

Read’ (which are interactive learning applications designed for young, non-verbal users), and a number of free or low cost technical solutions.

60. There are numerous other developers and providers of AAC software and apps. Call Scotland²³ has created ‘product wheels’, setting out the range of software and apps that is available for complex AAC needs on Android and iOS devices, and for complex additional needs; these identify numerous competing alternatives that are readily available for download. It has also created a similar chart for eye-gaze software. These charts are set out in **Annex 1**. Whilst these are not, according to Access Scotland, comprehensive (and so do not identify all possible apps), they do identify numerous solutions for different AAC needs.
61. A list of competing providers of AAC software is set out in Annex 2. Providers include: PRC (Touch Chat), Assistive Ware (Proloquo2Go and ProloquoText), Jabbla (Mind Express and Amego), Avaz (Avaz Pro and Free Speech), Panther Technology (Total Talk AAC), Therapy Box (Chatable and Predictable), Widgit (Widgit Go), Cough Drop, AlexiCom Tech (AlexiCom AAC) and Speak for Yourself. Some software provided by these providers is available on Windows devices, whilst other software is available for download on Apple iOS or Android devices and some is available for use on multiple devices. In addition, the operating systems of each of Apple (iOS), Google (Android) and Microsoft (Windows) also have AAC capability.
62. The parties’ software products are, to a significant extent, complementary. The only Smartbox software that has similar or overlapping functionality to that of Tobii Dynavox is ‘Grid 3’. Grid 3 overlaps with both Tobii Dynavox’s ‘Communicator 5’ and ‘Compass’ software. Competing software to Grid 3, Communicator 5 and Compass includes Mind Express (developed by Jabbla), Essence (developed by PRC) and Clicker 7 (developed by Crick Software), as well as a number of other programs that are designed for specific user segments that are also addressed by certain features of Grid 3, Communicator and Compass.
63. Compass is a legacy product that is no longer available for new download or installation, so does not impose a competitive constraint on Grid 3.
64. Communicator 5 is also a legacy product that Tobii Dynavox was, before the merger, intending to discontinue. It therefore imposes only a limited competitive constraint on Grid 3 [✂]. As noted in paragraph 62 above, there are several competing alternatives to Communicator 5 (and Grid 3), with at least equivalent functionality.

²³ Call Scotland is a service that is funded by the Scottish Government to help children and young people across Scotland to overcome disability and barriers to learning created by their environment, and to fulfil their potential: see <https://www.callscotland.org.uk/home/>.

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65. Whilst the Tobii Dynavox ‘Snap + Core First’ software is a current product (designed for users who are non-verbal from birth, for example due to autism, cerebral palsy or Rett’s syndrome), it overlaps only with one function of Grid 3 (which is a general purpose AAC software that is used by users with a wide range of communication disabilities, both congenital and acquired), known as the ‘Supercore Function’. Therefore, one is not a substitute for the other. There are also numerous alternative softwares that compete with Snap + Core First, including Proloquo2Go (developed by AssistiveWare) and Touchchat.
66. [✂]
67. It therefore follows that, as the parties are not particularly close competitors in the supply of AAC software and there are numerous competing developers and providers of AAC software, no horizontal unilateral effects will arise as a result of the Transaction.
68. The Transaction will also not lead to an SLC in innovation in AAC software. The merged entity will continue to face extensive competition in relation to each of the types of AAC software that Tobii Dynavox and Smartbox offer. As noted above, the software installed on ‘mid-range’ and ‘medical grade’ AAC devices is exactly the same as that which is available for download to a user’s own device on a ‘software only’ basis. Further, growth in demand is expected to be focused in the ‘mid-range’ and, in particular, ‘software only’ segments. It therefore follows that, in order to be maximise sales volume and be profitable, Tobii Dynavox will need to maximise its sales of software. This means that it will need to continue to innovate in order to remain competitive with competing providers of AAC software, including those which make their software available only for one platform (whether iOS or Windows), as Tobii Dynavox will be in competition with those suppliers on that platform.

AAC solutions

69. In the Decision, the CMA has focused on the supply of what it terms ‘dedicated AAC solutions’. It appears that this is limited to solutions that are based on purpose built AAC devices that are designed to meet the needs of end users with a range of ‘complex AAC needs’, although the CMA has not defined what is meant by ‘complex AAC needs’. Whilst Tobii considers that ‘dedicated AAC solutions’ is not the correct frame of reference against which to assess the effect of the Transaction on competition, the Transaction will not result in an SLC even on the very narrow basis adopted by the CMA in the Decision.
70. The CMA’s view that the Transaction will lead to an SLC on the ‘downstream’ market for AAC solutions is flawed for the following reasons:

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- 70.1. it has not taken any, let alone a proper, consideration of the significant competitive constraint imposed by consumer tablets;
 - 70.2. it has not identified all providers of what it defines to be ‘dedicated AAC solutions’ that are available in the UK;
 - 70.3. Tobii Dynavox and Smartbox are not particularly close competitors and face competitive constraints from other suppliers;
 - 70.4. there are low barriers to entry for any providers of AAC solutions (including but not only suppliers of ‘dedicated AAC solutions’) that are presently operating in other parts of the world, in particular in English-speaking countries, such as the United States;
 - 70.5. the NHS has significant countervailing buyer power; and
 - 70.6. the Transaction will not lead to reductions in innovation or customer support or to users’ needs not being met.
71. Each of these reasons is considered below in more detail. In addition, the Transaction will generate substantial static and dynamic efficiencies; this is considered separately below, in Section F.

Consumer tablets impose a significant, and growing, constraint on ‘dedicated AAC solutions’

72. The supply of ‘dedicated AAC solutions’ is not, for the reasons set out above (see paragraphs 26 to 34), the correct frame of reference against which to assess the effect of the Transaction on competition: the correct market is for ‘AAC solutions’, which has three overlapping segments: ‘software only’, ‘mid-range’ and ‘medical grade’. This includes AAC solutions delivered using consumer tablets and dedicated devices. In its analysis, the CMA has discounted entirely the extent to which consumer tablets, and solutions based on consumer tablets, impose a substantial and increasing competitive constraint on providers of AAC solutions. It was incorrect to do so.
73. It is clear that consumer tablets (either with or without specialised AAC software) do meet the communication and access needs of end users with a wide range of disabilities and AAC needs, including (as the NHS England AAC Procurement Guidance makes clear) for many users who are referred to the NHS ‘AAC hubs’ and therefore, by definition, have ‘complex’ needs for what the Guidance calls ‘high tech’ solutions.
74. When the iPad was first launched in 2011, it quickly established itself as a platform for delivering ‘touchscreen’ AAC solutions, which led to DynaVox Systems’ sales in North

America declining from \$75m to \$25m in only two years and thus led to its bankruptcy. The ability of tablets to meet such needs (and thus the competitive constraint imposed by them) has increased significantly since then, and will only continue to increase, as the accessibility and

AAC functionality of tablets and other consumer devices is continually enhanced by Apple, Microsoft, Google, Samsung and others.

75. Tobii Dynavox has responded to this market development by developing and launching numerous products in the past two years that directly compete in features and price-point with consumer electronics tablets (such as Indi, Speechcase and EyeMobile Plus). This is a radical development in the AAC sector and clearly illustrates how consumer electronics is the primary innovation and price-setting competitive force in the AAC sector today. ‘Traditional’ providers of AAC solutions have, in this highly-competitive environment, had to respond to competition from mainstream consumer electronics devices in this way in order to be able to effectively compete and grow a viable long-term business in touch-based AAC solutions.
76. When the Transaction is assessed in its proper frame of reference, it is clear that Tobii Dynavox and Smartbox face strong competitive constraints from other providers of AAC solutions, whether delivered using consumer tablets (either without or with peripherals) or purpose built devices, including for the small proportion of users that require an eye-gaze camera as an access solution.

There are considerably more than four existing suppliers of ‘dedicated AAC solutions’ in the United Kingdom and the parties are not each other’s closest alternatives

77. Even if the correct frame of reference for the CMA’s analysis were to be the supply of ‘dedicated AAC solutions’ (which it is not, for the reasons set out above), the Transaction would not lead to competition concerns.
78. In the Decision, the CMA appears to have taken account of only four suppliers of what it terms ‘dedicated AAC solutions’: Tobii Dynavox, Smartbox, PRC/Liberator and Jabbla (whose products are distributed in the UK by Techcess). It also appears to have been heavily influenced by the views of customers that the parties’ products were each other’s closest alternative and that they had few alternatives.²⁴
79. Providers of AAC solutions combine hardware (typically a tablet of some description), software and peripherals/accessories (such as, for example, speakers, joysticks, mice, rugged cases and, for those users which also have motor disabilities, eye-gaze cameras) into a solution. The

²⁴ [✂]

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production of hardware, software and peripherals/accessories each takes place on a global basis, as the CMA recognises. Therefore, subject to any local language or content requirements

(which are less relevant in an English-speaking country such as the UK), the ‘solution’ does not vary significantly from one country to another. The supply of ‘AAC solutions’ (howsoever defined) may take place on a national basis because of the need for customer and user support, which must generally be provided on a local, national basis (although many AAC solutions are sold online with minimal or no customer support).

80. The CMA (and customers) have ignored that there are in fact at least 13 providers globally of what the CMA calls ‘dedicated AAC solutions’, each of which either is selling, or has the capability to sell, ‘dedicated AAC solutions’ in the UK.

81. The following companies are presently selling ‘dedicated’ AAC solutions in the UK:

Smartbox (Grid Pad 11/13, Grid Pad 12)
Tobii Dynavox (I-12+/I-15+, I-110, Indi and Eye Mobile Plus)
PRC/Liberator (Accent 1000/1400 and Chatplus)
Jabbla (Tellus i5, Tellus 5, Mobi 3 and Allora)
Saltillo (NOVA chat 5/8/10/12 and Chat Fusion 8/10)
Abilia (Rolltalk NOVA, Lightwriter)
AMDi (iAdapter)

82. In addition, the following companies are presently selling ‘dedicated’ AAC solutions in other geographic markets, but could easily commence sales in the UK:

Forbes AAC (Winslate 10D/11D/12D and Proslate 8D10D/13D)
Talk to Me Technologies (Eyespeak 10/18, Wego 5/7/10/13 and Zuvo 10/12/18)
Ablenet (QuickTalker Freestyle)
Rehavista (Easytalkpad, Kompad and Logopad)
Humanelektronik (See Tech Pro 12/15)
EyeFree Assisting Communication Ltd. (Eye Control)

83. If account is taken of each these providers (each of which either does, or has the ability to, sell in the UK), it is clear that customers and end-users in the UK will continue to have sufficient choice post-merger and that there will remain effective competition even in the supply of what the CMA terms ‘dedicated AAC solutions’. On such a basis, the merged entity would have a share of supply considerably below the very high levels identified by the CMA in the Decision. Although Tobii Dynavox will remain a significant supplier, it will continue to face effective

competition from numerous actual competitors in the UK, as well as several potential competitors, even on the CMA's narrow approach to the appropriate frame of reference.

84. Smartbox was a [REDACTED] supplier of what the CMA has described as 'dedicated AAC solutions', having introduced its 'Grid Pad 12' product only in July 2018 (its 'wrapped' tablets (i.e. Grid Pad 11/13) would not meet this definition, being consumer tablets with additional accessories and peripherals added to them). It is not clear that this would have been an effective entry. [REDACTED]. It is therefore [REDACTED].

Barriers to entry in the supply of AAC solutions are low

85. The production of hardware, software and peripherals/accessories each takes place on a global basis, as the CMA recognises. The supply of 'AAC solutions' (howsoever defined) may take place on a national basis because of a need (in some, but not all, cases) for a local sales force and distribution function. A supplier that is not active in the UK can easily establish the sales, distribution and any necessary customer support functions that may be required to compete effectively in the UK. It can either establish its own sales and distribution operation (as Tobii Dynavox and Smartbox have each done, with teams of approximately 10 employees in the UK) or appoint one or more distributors or resellers (as Tobii Dynavox formerly did, and which Jabbla does). This could be established quickly and without significant expense. It may also be able to sell directly over the internet. There are no regulatory barriers to entry: in the UK, AAC devices do not need to meet the regulatory requirements for medical devices. Localisation (whether of language or content) is not a significant factor in the UK, given the prevalence of English language AAC software and solutions, driven by the very large US market: in 2017 and 2018 combined, Tobii Dynavox spent only [REDACTED] on UK-specific localisation.

The NHS has significant countervailing buyer power

86. The NHS is the predominant purchaser of AAC solutions in the UK. It therefore has significant countervailing power and can, if it chooses, impose price caps or otherwise restrain price increases. It also has sufficient buyer power to be able to sponsor market entry in the UK (for example by a provider of AAC solutions in another country, such as the United States, that does not presently operate in the UK). It has sufficient demand for such entry to be quick and profitable, particularly as it is not necessary in the UK for a device used to deliver an AAC solution to have received prior regulatory authorisation as a medical device.

The merger will not limit innovation, lead to reduced customer support or result in users' needs not being met

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87. In the Decision, it is suggested that customers are concerned that Tobii Dynavox would, following completion of the Transaction, limit innovation, reduce customer support and no longer serve users' needs effectively. Such concerns are unfounded.
88. The UK represents only approximately 5% of total current global supply of AAC solutions. As the CMA has correctly identified, innovation in, and the development of, AAC devices, software and peripherals takes place at the global level. Demand and thus innovation in AAC software and devices (and thus in AAC solutions) are therefore driven by global trends and competition, particularly in the United States, which is the largest market for AAC technology and drives innovation. In the case of eye-tracking technology, innovation is not even driven by the AAC sector (which is and will remain a niche application, representing a very small, and decreasing, share of eye-gaze camera use), but by the consumer electronics and other high volume and high growth sectors; the AAC sector merely benefits from these developments. Innovation in eye-tracking is also more generally driven by the consumer electronics sector, including the capabilities of smartphones, tablets and computers, including (but not only) in accessibility.
89. Innovation in the AAC sector will therefore be unaffected by the Transaction, irrespective of any hypothetical effect that the Transaction might have on competition in the supply of AAC solutions in the UK.
90. As is discussed below (in Section F), the Transaction will generate significant efficiencies and other consumer benefits. Tobii Dynavox will continue to innovate in both hardware and software, in order to develop better products, including for disabilities that are not well served at present, such as aphasia. There are no plans to reduce customer service or customer support in the UK (or anywhere else). All existing products will continue to be supported as they were before the Transaction, even if they are placed into maintenance (i.e. are continued to be sold, but with no on-going development) or are discontinued (i.e. are no longer sold).

E. THE TRANSACTION WILL NOT GIVE RISE TO VERTICAL FORECLOSURE EFFECTS

91. In the Decision, the CMA considers that the Transaction will also result in an SLC due to vertical foreclosure of rivals. It has identified the following theories of harm:
- 91.1. input foreclosure of Smartbox's AAC software to rival suppliers of dedicated AAC solutions;
- 91.2. input foreclosure of Tobii's eye-gaze cameras to rival suppliers of AAC solutions; and

91.3. customer foreclosure of eye-gaze camera competitors.

92. Each of these concerns is unfounded for the reasons set out below.

The Transaction will not lead to input foreclosure of Smartbox’s AAC software to competing providers of AAC solutions

93. It is assumed that the CMA’s concern relates to a potential refusal to licence Smartbox’s ‘Grid 3’ software to rivals, as this is Smartbox’s most popular software product. This software is available to download on the Smartbox website. In addition, Smartbox had not itself ceased to licence third parties once it commenced selling its own AAC hardware. Furthermore, whilst no doubt a well-regarded software, ‘Grid 3’ is not an essential or ‘must have’ input in order for a provider of AAC solutions to be competitive.

94. Tobii Dynavox intends to continue to licence Grid 3 to competitors and to make it available for direct download. It has no plans to cease licensing Grid 3.

95. Tobii Dynavox will have no incentive to cease making ‘Grid 3’ (and other Smartbox software) available for download, as this is an essential route to market to those users in the ‘software only’ segment, which will be the fastest growing segment. Therefore, competitors and endusers would continue to be able to download ‘Grid 3’ directly, thereby circumventing any refusal to licence it. Whilst there is a difference in price between the wholesale price (paid by a licensee) and the retail price (paid for a download), this is not likely to be sufficiently large to make a competing provider of AAC solutions uncompetitive in the supply of AAC solutions.

96. Similarly, Tobii Dynavox would have no incentive to cease licensing Grid 3 to competitors. As set out above, there are numerous developers of AAC software. Even if Tobii Dynavox were to refuse to licence Smartbox’s AAC software to rivals (or to do so on worse terms), this would not lead to foreclosure of competing providers of AAC solutions. Competitors either have their own software, could develop their own software or could licence an alternative software from one of the many developers of AAC software. Indeed, it is notable that both Jabbla and Liberator (who appears to have made negative comments to the CMA concerning the continued licensing of Grid 3) sell AAC devices that have either other software installed (e.g. Jabbla’s ‘TellusI5’ model has Mind Express 4 (Jabbla’s own software) installed²⁵) or offer ‘Grid 3’ as an option, together with other software (e.g. Liberator’s Accent 1000 offers a range of language

²⁵ See <http://www.jabbla.com/products.asp?itemID=54>. Mind Express 4 is described as a “flexible and versatile software: it can be used for everyday communication and as a therapeutic and educational tool”: see <http://www.jabbla.com/products.asp?itemID=9>.

software options, of which ‘Grid 3’ is only one²⁶). This confirms that ‘Grid 3’ is not a ‘must have’ software and that competitors have alternative options, so cannot be foreclosed.

The Transaction will not lead to input foreclosure of Tobii’s eye-gaze cameras to competing providers of AAC solutions

97. Whilst Tobii may, subject to complying with any pre-existing contractual obligations, have the ability to cease supplying eye-gaze cameras (whether as integration components or as complete peripheral devices) to competing providers of AAC solutions, this is not merger-specific. Before the Transaction, Tobii already supplied eye-gaze cameras to its competitors, including PRC (which was supplied with integration components, by Tobii Tech) and Smartbox and Jabbla (which were supplied with complete devices by Tobii Dynavox). This is an example of numerous collaboration projects that the Tobii group has with third parties to supply eyetracking technology.²⁷
98. Smartbox is only a small supplier of AAC hardware, having commenced supplying ‘wrapped’ tablets (Grid Pad 11 and 13) in 2016 and its new ‘Grid Pad 12’ device in July 2018. It represents a small proportion of demand for eye-gaze cameras for AAC applications. Therefore, the Transaction is unlikely to materially change Tobii Dynavox’s incentives to supply eye-gaze cameras to its competitors. Furthermore, Tobii Tech also supplies eye-gaze cameras for gaming use (the Tobii 4C model, [🔗]); competing providers of AAC solutions (as well as individual consumers) could, in the event of a refusal to supply by Tobii Dynavox, purchase this model from numerous distributors.²⁸
99. Furthermore, even if Tobii Tech were to refuse to supply eye-gaze cameras to competing providers of AAC solutions, this would not lead to foreclosure, because (i) less than 10% of users of AAC solutions require an eye-tracking camera, so competitors would not be foreclosed from supplying the remainder of end-users who do not require eye-tracking and (ii) there are several other existing suppliers of eye-gaze cameras for use in AAC solutions, including Alea Technologies, Irisbond, Eye Tech, LC Technologies, IScan and 7invesum, which competitors could use instead of Tobii Tech’s eye-gaze cameras. More broadly, there are approximately 30 other suppliers of eye-tracking technology, including SR Research, Gaze Point, and Pupil Labs (each of which supplies eye-tracking for medical devices for other applications) and Seeing

²⁶ See <https://www.liberator.co.uk/products/communication-aids/accent-1000>.

²⁷ In fact, Tobii had an agreement with DynaVox Systems to supply it with eye-gaze cameras prior to Tobii’s 2014 acquisition of the assets of DynaVox Systems.

²⁸ This includes Amazon: see https://www.amazon.co.uk/Tobii-Eye-Tracker-Game-changingPeripheral/dp/B01MAWPMXQ/ref=sr_1_1?ie=UTF8&qid=1551465257&sr=8-1&keywords=tobii.

Machines, Smarteye, The Eye Tribe, Mirametrix and SenseTime, which could easily expand into supplying eye-tracking technology and cameras for AAC solutions.

100. It therefore follows that there is no prospect of foreclosure of competing suppliers of AAC solutions by Tobii refusing to supply them with eye-gaze cameras.

The Transaction will not lead to customer foreclosure of eye-gaze camera competitors

101. Whilst it is likely that Smartbox would, following completion of the Transaction, source its requirements for eye-gaze cameras primarily from Tobii Tech, this will not lead to foreclosure of any competing suppliers of eye-gaze cameras. This is for the following reasons:

101.1. eye-gaze cameras are used for multiple applications, particularly in the high-volume consumer electronics (PCs, tablets, mobile phones and virtual reality/augmented reality headsets) and gaming products segments, as well as for other, niche, low volume applications (including AAC solutions, medical assessments and robotic surgery systems), in each case either as an integral component or as an external peripheral (which can be connected using a USB cable);

101.2. [REDACTED];

101.3. total global annual demand for eye-gaze cameras is forecast to grow significantly in the next few years, with growth driven by demand from the ‘mass market’ consumer electronics sector. In 2019, Tobii Tech plans to sell approximately [REDACTED] eye-tracking devices, of which only approximately [REDACTED] will be for AAC use, [REDACTED]. Demand from the AAC sector is not expected to grow significantly in the coming years; and

101.4. research and innovation in eye-gaze cameras is driven by the demands of the ‘mass market’ consumer electronics and automotive sectors (in terms of reduced size, weight and power consumption and increased performance), which (unlike the AAC solutions sector) has the potential for significant growth. It is estimated that approximately 30 companies are presently engaged in R&D into eye-tracking technology, for a range of consumer and non-consumer applications, including Apple, Microsoft, Google, Samsung and Facebook. This innovation is not driven by the AAC sector, but will clearly be of benefit to it.

102. Given the very small proportion of total worldwide demand for eye-gaze cameras represented by Smartbox, it is clear that even if Smartbox would purchase eye-gaze cameras only from Tobii, this would not foreclose competing suppliers of eye-gaze cameras. Competing suppliers would continue to have sufficient alternative sources of demand, whether from ‘mass volume’

applications or from other smaller applications of eye-gaze technology (such as medical assessments and robotic surgery). It therefore follows that there is no prospect of customer foreclosure of competing suppliers of eye-gaze cameras.

F. THE TRANSACTION WILL GENERATE EFFICIENCIES AND OTHER BENEFITS FOR CONSUMERS

103. Tobii anticipates that Transaction will generate significant efficiencies and other life-enhancing benefits for end users, in particular assisting disabled people into employment. The Transaction will bring together two largely complementary R&D teams, combining Tobii Dynavox's expertise in AAC hardware and Smartbox's know-how in AAC software. Tobii Dynavox also has significantly greater human and financial resources for R&D (over [REDACTED] developers and a budget of approximately [REDACTED]) than Smartbox (under [REDACTED] developers and a budget of [REDACTED]).

104. [REDACTED]²⁹.

105. By combining the parties' skills, and research budgets, developing a single platform (based on Smartbox's 'Grid' software) and eliminating duplicated R&D, the parties will be able to achieve the following efficiencies and benefits for end-users, which would not have been possible absent the Transaction:

105.1. [REDACTED];

105.2. improved integration between hardware (such as eye-gaze cameras) and software;

105.3. development of eye-tracking software so that it can be used on more consumer tablets, which will deliver increased functionality at lower cost;

105.4. faster development of new products: the merger will allow Tobii Dynavox to reduce the development time for introducing a new product generation, from the current [REDACTED] years to [REDACTED] years;

105.5. development of enhanced versions of existing software products; and

105.6. development of new functionalities, [REDACTED].

106. The Transaction will also generate the following benefits for consumers:

106.1. [REDACTED];

²⁹ [REDACTED]

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106.2. improved customer support, in terms of an increase in field representatives (from [REDACTED] to [REDACTED] representatives in the UK) and customer support staff (from [REDACTED] to [REDACTED] staff in Europe, with Tobii Dynavox staff in the US providing additional 24/7 cover); and

106.3. significantly strengthened training resources.

107. [REDACTED].

108. [REDACTED].

109. [REDACTED], there will in fact be increased investment in R&D, funded by using the parties' assets more efficiently and effectively.

110. This is a clear, merger-specific efficiency that will enhance competition and provide benefits for consumers, both in terms of the development of new AAC solutions and bringing to market more quickly both new innovative products and improvements to existing products.

G. CONCLUSION

111. The AAC sector and the eye-tracking sector are both nascent sectors, in which existing market penetration is low and unmet demand is high. Product development in both sectors is fastmoving and, in addition to those with a specific focus on them, 'big tech' companies (such as Apple, Microsoft, Google, Samsung and Facebook) are devoting substantial resources to developing both access solutions and eye-tracking technology. This will expand the range of products available to those with speech, communication and access disabilities, with consumer tablets and other consumer electronics products being suitable devices for an increasing number of users of AAC technology.

112. It is important that, in assessing the effects of the Transaction on competition, the CMA take due account of the dynamic nature of competition in these sectors. If it does so, it will conclude that, on the balance of probabilities, the Transaction will not result in an SLC. The parties' activities are substantially complementary in AAC software and there will remain numerous other providers of AAC software. In AAC devices and AAC solutions, [REDACTED], and the parties will continue to face effective competition from several competitors. Tobii Dynavox will not have the ability and incentive to foreclose competition on any relevant market.

113. Finally, the Transaction will lead to both static and dynamic efficiencies, by enabling the parties to focus their R&D resources (whether financial, technical or human) on developing new products that will enable more people with communications disabilities to benefit from AAC technology.

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114. Tobii looks forward to engaging with the CMA's Inquiry Panel and the CMA's Phase 2 team.
1 March 2019

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ANNEX 1

CALL SCOTLAND AAC SOFTWARE PRODUCT WHEELS

Android Apps for Complex Communication Support Needs: Augmentative and Alternative Communication (AAC)

**Android Apps for Complex Communication Support Needs:
Augmentative and Alternative Communication (AAC)**

iPad vs Android

The iPad is well established as a communication tool, but Android tablets (and smartphones) are being used more often, especially in the home situation, therefore useful to consider:

- Android tablets are generally less expensive than iPads
- The Android Operating System is less tightly controlled than the Apple iOS, so some apps, eg. text-to-speech voices, can work across most apps in an Android device, unlike the iPad where voices have to be downloaded separately for each app.
- There are many more AAC apps available for the iPad.
- There is a wide variation of Android tablet types, some with individualised Android Operating Systems and some with their own bespoke App stores. Therefore, there is no guarantee that every AAC app for Android will work on all tablets/Operating Systems.
- Some Android devices cannot be upgraded to the latest version of the Operating System, so some apps won't work on them.

An electronic version (with clickable links) can be downloaded from <http://www.callscotland.org.uk/downloads/posters-and-leaflets/>



Identifying Suitable Apps

This is not a comprehensive list, but an attempt to identify relevant apps for supporting AAC and to categorise them according to the functions of the communication system. All Apps are available from the Google Play Store. A few have been tested, but most information is based on independent reviews and App developer descriptions. Unlike the iPad, there is little consensus on the 'best' Android apps for AAC. We'd be happy to receive suggestions for inclusion in future versions: call.scotland@ncl.ac.uk

Switch Access

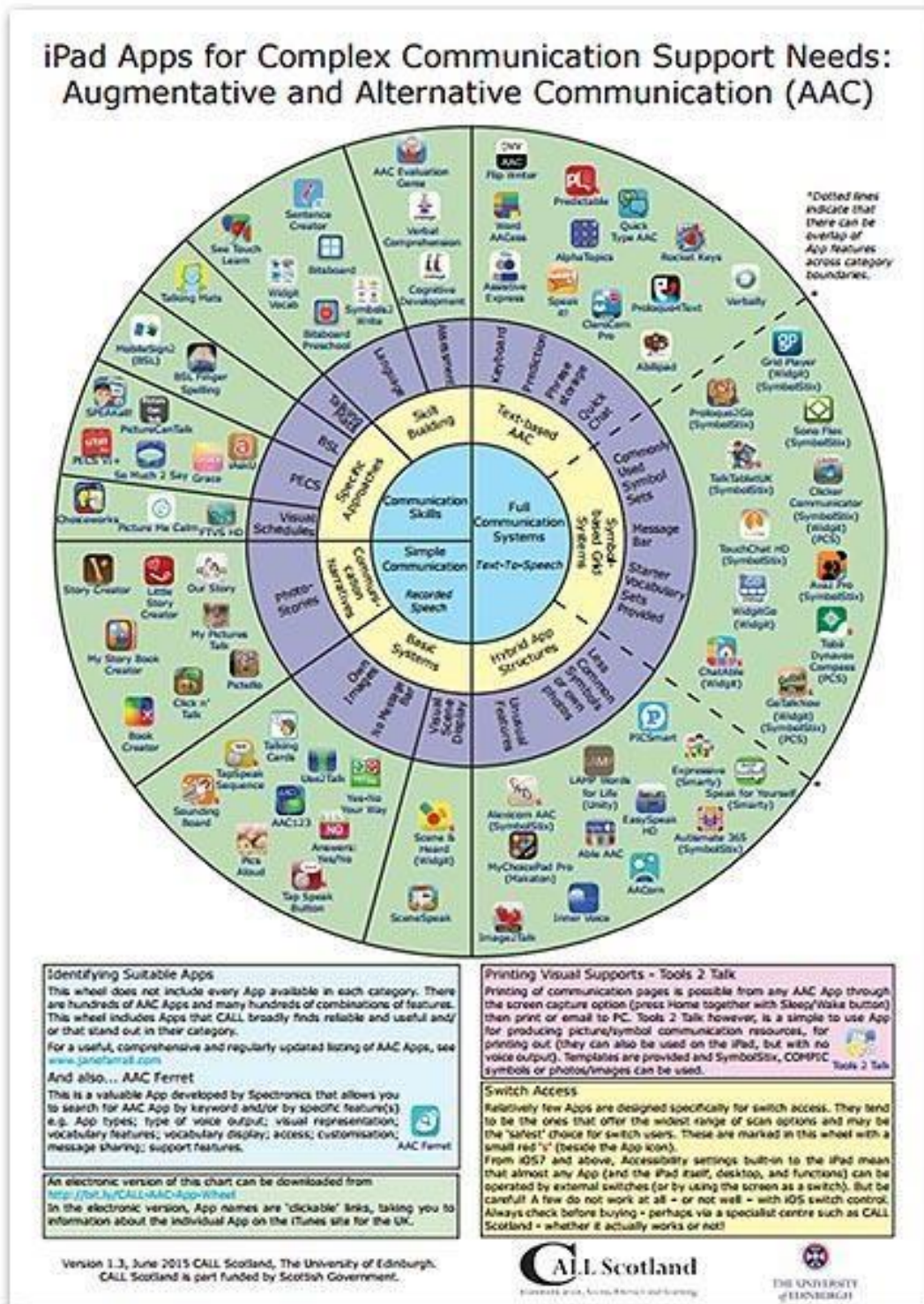
Switch access may be necessary for some users, requiring a USB or Bluetooth switch interface and switch(es) tailored to the user. There are very few Apps in the wheel that are designed specifically for switch access, but from Android Operating System 5 and above there are Accessibility settings built-in, allowing operation by one or two external switches (or by using the screen, as a switch, or head movements). But always check first if the App selected can be accessed via these access methods and via the Switch Access Settings on your tablet. Further information from Android help: <http://bit.ly/10rns87>

Version 1.0, June 2016 CALL Scotland, The University of Edinburgh.
CALL Scotland is part funded by Scottish Government.

Source: <https://www.callscotland.org.uk/downloads/posters-and-leaflets/android-apps-for-complexcommunication-support-needs/>.

iPad Apps for Complex Communication Support Needs: Augmentative and Alternative Communication (AAC)



Source: <https://www.callscotland.org.uk/downloads/posters-and-leaflets/ipad-apps-for-complexcommunication-support-needs/>.

iPad Apps for Learners with Complex Additional Support Needs

iPad Apps for Learners with Complex Additional Support Needs


More Information
If you are using the electronic version, click on the individual app icon to get details from the iTunes site.

Using iPads with learners who have Complex Needs
It is important to carefully consider the why and how when using iPads with learners who have complex needs; asking the question "Why am I doing this?" so that the use of an iPad does not become an end in itself, but rather a means of learning new skills.
Learners with Complex Needs need to experience and learn cognition, communication and social interaction skills. An environment which focuses on responding, interacting and communicating is essential. With careful planning, an iPad can become part of this responsive environment, creating opportunities for communication and interaction.
For more information on using technology with learners who have complex needs, see here: <http://bit.ly/1v33k9NPO>.


Identifying Suitable Apps
The wheel does not include every App available in each category, nor do the categories represent a comprehensive list of all developmental areas. We have selected particular areas where an iPad and app can be a useful teaching and support tool.
Some apps could fit within multiple categories, but have listed them under a single category that is particularly relevant to the app.

App Wheel Key - Switch Access and CVI
Some Apps have been designed to use with a switch. These are indicated with a red border.
Apps which are particularly suitable for learners with a cortical visual impairment (CVI) have a blue border.


Guided Access
Many learners are so in love with the iPad itself (especially if they are used to using it primarily for watching TV, films and listening to music), that they can be more interested in pressing the 'Home' button and swiping around rather than stick within one App. In order to support a learner to make best use of an app for learning and developing skills, Guided Access allows you to control which features of the iPad and app you want to make available, and which you want to 'lock'. For information on how to set up guided access see here: <http://bit.ly/1w4u6ed-Q5>.



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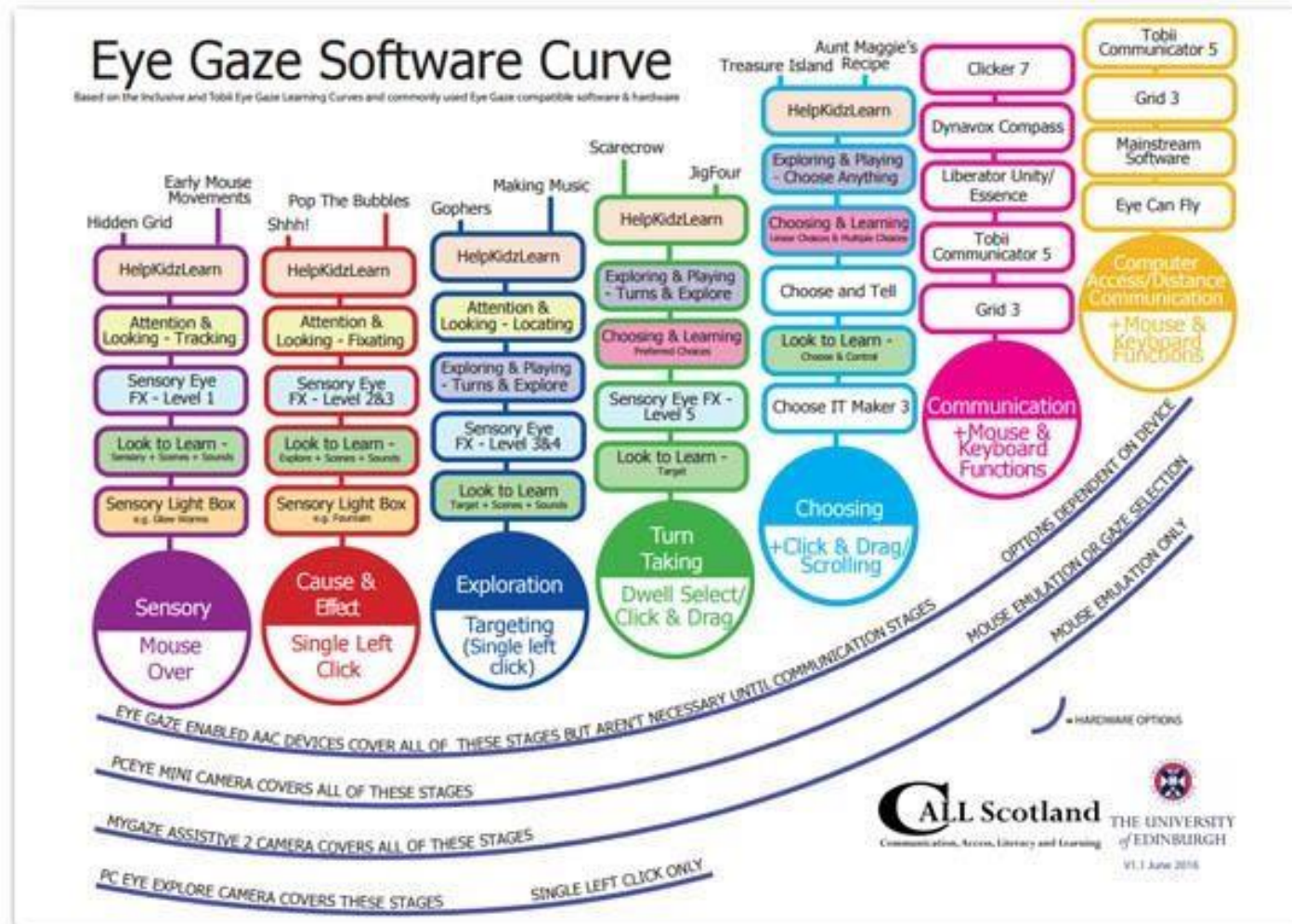
Version 1.0, January 2016, CALL Scotland, The University of Edinburgh.
CALL Scotland is part funded by Scottish Government.
An electronic version of this sheet can be downloaded from:
<http://www.callscotland.org.uk/files/switch-access-and-cvi>



CALL Scotland
Communication, Access, Literacy and Learning

Source: <https://www.callscotland.org.uk/downloads/posters-and-leaflets/ipad-apps-for-learners-with-complex-additional-support-needs/>

Eye Gaze Software Curve



Source: <https://www.callscotland.org.uk/downloads/posters-and-leaflets/eye-gaze-software-curve/>

ANNEX 2

DEVELOPERS OF AAC SOFTWARE

Supplier	Software
Apple	iOS
Microsoft	Windows 10
Google	Android
Smartbox	Grid for Windows
	Grid for iOS
Tobii Dynavox	Snap for Windows
	Snap for iOS
	Communicator
	Sono Flex for iOS
Saltillo / PRC	Touch Chat for iOS
	Touch Chat for Android
	LAMP Words for Life
AssistiveWare	Proloquo2Go
	Proloquo4Text
Jabbla	MindExpress
	Amego
Attainment	GoTalk Now!
Gus Communication	Talk Tablet UK
Crick Software	Clicker Communicator
Avaz	Avaz Pro
Panther Technology	TotalTalk AAC
Therapy Box	Chatable
	Predictable

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Widgit	Widgit Go
CoughDrop	CoughDrop for Windows
	CoughDrop for Android
	CoughDrop for iOS
Alexicom Tech	Alexicom AAC
Speak for Yourself	Speak for Yourself
InnerVoice	InnerVoice App
Grembe Apps	iCommunicate
Intuary	Verbally
Aacorn	AACORN AAC
Claro Software	ClaroCom
Ola Mundo	Socky
Upcard	Upcard.io
Avaz	FreeSpeech
Don Johnston	Co:Writer
Julius Sweetland	OptiKey
Cognixion	SpeakProse