OFCOM DRAFT ANNUAL PLAN 2011/12

CONSULTATION

RESPONSE FROM SORENSON COMMUNICATIONS, INC.

MARCH 2011

1. Sorenson Communications, Inc. (Sorenson) is grateful for the opportunity to respond to the Ofcom Draft Annual Plan 2011/12 Consultation (Annual Plan).

2. Founded in 2000, Sorenson is a leading developer and provider of telecommunications technology for Deaf people in the United States. Sorenson has particular expertise in providing Video Relay Services (VRS), which enable Deaf callers to conduct video relay conversations with hearing people through a qualified sign language interpreter. VRS is a proven technology and has been operating successfully in the United States for several years. We believe that making universal VRS available in the UK is long overdue.

3. We welcome Ofcom's statement at paragraph 6.29 of the Annual Plan that it is looking at additional relay services and, "where we identify gaps in provision and areas for enhancement, we will consult on proposals for improvement."

4. We are, however, disappointed that the need to introduce new relay services, in particular VRS, is not included in Ofcom's list of priorities for 2011/12. We are also disappointed that the plan is not more specific about the services that are needed, especially given the ample data now available to Ofcom from the nine studies on relay services it has conducted since 2004 and its most recent research conducted by Opinion Leader and published on 4 February 2011, entitled "Ofcom Relay Services". These studies show that VRS should not be relegated to a "possibility" but needs to be made a reality to ensure that Deaf end-users have functionally equivalent access to telecommunications services, something that is now mandated by the relevant EU legislation.

5. We welcome the recognition, in paragraph 6.43, of the obligation on EU Member States to encourage the availability of terminal equipment for disabled end-users. However, terminal equipment is not the key to enabling equivalent access for Deaf end-users to telecommunications. The key to providing equivalent access for Deaf individuals to telecommunications services is enabling and funding appropriate relay services. If a competitive market for relay services is set up, there will be an incentive to provide VRS terminal equipment, which is already a mature technology.

6. We welcome the Communications Consumer Panel press release of 4 February 2011, which "calls on Ofcom to set up a video relay service for deaf and partially hearing

consumers" and states that "these services will be particularly critical for some people."[1] Indeed, they are critical for British Sign Language (BSL) end-users.

7. The next twelve months provide Ofcom with a unique opportunity to bring real change to the lives of Deaf telecommunications users. We have kept this submission short to avoid repeating information already provided to the electronic communications team then at the Department for Business (BIS) (a policy area that we understand is now within the competence of the Department for Culture Media and Sport). For ease of reference, we annex Sorenson's response to the BIS consultation on "Implementing The Revised EU Electronic Communications Framework: Overall Approach and Consultation on Specific Issues."

2011/12 – drivers for change

8. The revised EU Electronic Communications Framework offers a unique opportunity for significant changes to be implemented in the UK for end-users with disabilities, in particular with respect to equivalent access to telecommunications and choice of relay service providers. Through these changes, Ofcom has both the obligation, and the ability, to transform the lives of Deaf end-users in the UK, enabling functionally equivalent access to telecommunications for the first time, and bringing a number of significant economic and social benefits to the UK.

9. The body of evidence in favour of introducing VRS in the UK is also greater than ever before. Ofcom's most recent research conducted by Opinion Leader shows that the current access to telecommunications for Deaf end-users is severely lacking and "falls short of providing a 'real conversation'".

10. The new legislative environment and the experience of end-users both point to the need for new relay services and a choice of providers of such services. Ofcom should acknowledge this in its Annual Plan.

VRS – the only functionally equivalent means of access for BSL users

11. VRS provides Deaf end-users with a "real conversation." The creation of a competitive market for universal VRS in the UK would provide BSL users with functionally equivalent access to telecommunications while, at the same time, enhancing the choice of services and providers available to Deaf end-users, thus bringing their telecommunications experience more in line with that enjoyed by hearing people. VRS is essential for BSL users, not least because the only relay service currently available, text relay, suffers from problems in two fundamental areas – language and speed – which mean that it is incapable of providing an equivalent service for someone whose first language is BSL.

Language

12. Text relay services require BSL users to communicate in their second language, English. To understand the implications of that, it is critically important to appreciate

[1] Communications Consumer Panel, Press Release dated 4 February 2011, http://www.communicationsconsumerpanel.org.uk/Text%20relay%20comment%20final.pdf

the differences between written / spoken English and BSL. Not only is meaning conveyed differently in sign language than in standard English; they are, in fact, different languages. A BSL user communicating via a text relay service is effectively having to communicate in a non-native, second language (written English). By contrast, when using VRS, Deaf individuals are able to express themselves more fully and naturally: using the facial expressions, gestures, and body language that are integral components of BSL and that are impossible to use when communication is restricted to text.

Speed

13. Text relay services are significantly slower than voice communication and do not take place in real time. The time it takes a Deaf text relay user to type and read messages causes a delay and makes communication much more cumbersome. It does not allow a fluid conversation in which the participants can interrupt one another, respond instantly to news and so on. Standard voice telephony allows communication at a speed of 170 words per minute (wpm), compared to 30 wpm for text relay. VRS however allows an impressive 150 wpm. The Plum report found that VRS is three to four times faster than basic text relay, and "offer[s] substantial improvements in terms of natural, fluid conversation and nuanced expression that conveys emotions and helps clarify the intention behind words." By contrast the report sets out that text relay "does not allow natural, fluid conversation' and 'provides slow conversation speed, typically 30 words per minute, which leads to low productivity at work and frustrates many users when used for social purposes".[2]

14. This point was highlighted in Opinion Leader's February 2011 research, with respondents citing "real time conversation" as "the single most important feature of a communication service for people who were deaf or had speech difficulties."

15. Currently, to access telecommunications, Deaf end-users do not have a functionally equivalent means of access, a choice of services, or a choice of providers. Instead, Deaf end-users rely on the slow, impersonal and antiquated text relay service, provided by only one company, BT.

Conclusion

16. For the reasons set out above, we urge Ofcom to make the introduction of VRS an explicit priority in their 2011/12 Annual Plan. In so doing, Ofcom will not only be revolutionising the lives of Deaf people across the country, but also helping to fulfil its regulatory aims as already articulated in the Annual Plan. Creating a competitive market for universal VRS in the UK would promote effective and sustainable competition, help communications markets work for consumers and would bring the UK into compliance with the new regulatory duties arising from revisions to the European Electronic Communications Framework.

[2] Voice telephony services for deaf people - an independent report for Ofcom, Plum, p.1 - 2.

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Annex

'IMPLEMENTING THE REVISED EU ELECTRONIC COMMUNICATIONS FRAMEWORK: OVERALL APPROACH AND CONSULTATION ON SPECIFIC ISSUES', RESPONSE FROM SORENSON COMMUNICATIONS, INC. DECEMBER 2010

BIS PUBLIC CONSULTATION

'IMPLEMENTING THE REVISED EU ELECTRONIC COMMUNICATIONS FRAMEWORK: OVERALL APPROACH AND CONSULTATION ON SPECIFIC ISSUES'

RESPONSE FROM SORENSON COMMUNICATIONS, INC.

DECEMBER 2010

1. Introduction

1.1 Sorenson Communications, Inc. (Sorenson) is grateful for the opportunity to respond to the BIS consultation, 'Implementing the revised EU electronic communications framework: Overall approach and consultation on specific issues'.

1.2 Founded in 2000 and based in the United States, Sorenson is the leading developer and provider of telecommunications technology for Deaf people. Sorenson has particular expertise in providing Video Relay Services (VRS), which enable Deaf callers to conduct video relay conversations through a qualified sign language interpreter. VRS is a proven technology and has been operating successfully in the United States for several years. We believe that making universal VRS available in the UK is long overdue.

1.3 We share the Minister for Culture, Communications and Creative Industries' assertion regarding mobile and fixed line phone services, e-mail and the internet that '*it is hard to imagine life without this important sector*'. Yet, for Deaf and hard of hearing people, access to the first two of these is restricted. For British Sign Language (BSL) users, there is no access to telecommunications at all as they are required to communicate through typed messages in their second language, English. The primary telecommunications service for Deaf people in the UK is the Text Relay service operated by BT. However, as set out in the foreword to a 2009 report prepared by Plum Consulting for Ofcom on voice telephony services for Deaf people (the Plum report), the text relay service '*...relies on technology which is 30 years old.*'

1.4 The Plum report also noted that *'people with hearing impairments are making increasing use of other telecommunications services, such as email, text messages (SMS) and instant messaging*.' While these additional services and developments in communications are helping some in the Deaf community, they are no less restrictive for BSL users than Text Relay.

1.5 The revised EU electronic communications framework offers a unique opportunity for significant changes to be implemented in the UK for end-users with disabilities, in particular with respect to equivalent access and choice. Through these changes, Government has both the obligation, and the ability, to transform the lives of Deaf users in the UK, enabling functionally equivalent access to telecommunications for the first time, and bringing a number of significant economic and social benefits to the UK.

1.6 For example, research conducted by Europe Economics shows that establishing a competitive market for VRS in the UK would create a net benefit for the economy of between £600 million and £1.1 billion over ten years.[1]

1.7 The revised legislation requires that disabled end-users have a choice of services and providers. The creation of a competitive market for universal VRS in the UK would drive significant investment by existing providers, and encourage new entrants. The research by Europe Economics shows that a competitive market would create over 1,500 new interpreting jobs, and over 2,500 jobs in total.

1.8 In the United States, Sorenson has invested millions in the development and training of our interpreters and broader employee base. We envisage making proportionate investments in the UK if a sustainable platform for investment is created.

1.9 This submission concentrates on the amendments to the Universal Service Directive (USD)[2] and on the implications of the changes to the legislation for the UK's Deaf community. It focuses, first, on the critical changes introduced by the revised legislation and second, how those changes should be interpreted in practice. We then look at Questions 9, 10, 13 and 14 of the consultation. Separate annexes set out:

- How VRS works (Annex 1).
- A legal roadmap outlining how universal VRS could be introduced in the UK (Annex 2).
- The costs and benefits of introducing universal VRS in the UK (Annex 3).

2. Changes to the Universal Service Directive (USD): focus on disabled users

2.1 We welcome the important changes introduced into the EU legislation through the amendment to Article 7 ('Measures for disabled end-users'), the introduction of new Article 23a ('Ensuring equivalence in access and choice for disabled end-users') and the clarification provided by Recital 12 (defining the term equivalence) of the USD. Together they impose important requirements on EU Member States that should have a profound impact on the disabled population.

2.2 Taken together, the new Articles 7 and 23a, and Recital 12 affirm that:

(a) the UK must provide equivalent access for disabled users;

(b) access must be functionally equivalent; and

(c) there must be a choice of services and providers.

[1] See Annex 3, 'Video Relay Services in the UK'.

[2] Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services.

2.3 **Article 7.** Article 7 of the USD contains an obligation on EU Member States to:

> *'take specific measures to ensure that access to, and affordability of, [telephone services] for disabled end-users is equivalent to the level enjoyed by other end-users.'*

In 2009, the USD was amended[3] (the Amending Directive) and the obligation under Article 7 was bolstered to introduce an unqualified obligation. In the original Directive the obligation to ensure equivalent access was qualified by the caveat 'where appropriate' and this is now absent from the text of the article above. Hence, there is now an absolute obligation on the UK to take specific measures to ensure equivalent access.

Article 7(2) goes on to provide that:

'Member States may take specific measures, in the light of national conditions, to ensure that disabled end-users can also take advantage of the choice of undertakings and service providers available to the majority of end-users.'

2.4 **Article 23a.** The wording of new Article 23a is equally stringent in that it states:

> '*Member States shall enable relevant national authorities to specify, where appropriate, requirements to be met by undertakings providing publicly available electronic communication services to ensure that disabled end-users:*
>
> *(a) have* ***access to electronic communications services equivalent*** *to that enjoyed by the majority of end-users; and*
>
> *(b) benefit from the* ***choice of undertakings and services*** *available to the majority of end-users.*'

Article 23a should thus be seen as an attempt to buttress the pre-existing obligation on Member States in Article 7 to provide equivalent access and choice to disabled end-users,[4] by ensuring effective delegation of powers to, and action by, the relevant national regulator (Ofcom in the case of the UK). According to the Body of European Regulators for Electronic Communications (BEREC), the intention of Article 23a is to *'ensure that end-users with disabilities, estimated at 15% of the European population, can more fully participate in and benefit from technological advances and developments in electronic communications that are available to other end-users.*'[5]

2.5 **Recital 12.** There was no definition of equivalence in the main body of the original USD, nor any relevant guidance in the accompanying recitals. However, Recital 12 to the Amending Directive provides an unequivocal definition:

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[3] Directive 2009/136/EC of the European Parliament and of the Council of 25 November 2009 amending Directive 2002/22/EC.

[4] Article 7, paragraphs 1 and 2.

[5] BEREC, *'Electronic communications services: Ensuring equivalence in access and choice for disabled end-users*', Public consultation, 11 October – 26 November 2010.

> *'Equivalence in disabled end-users' access to services should be guaranteed to the level available to other end-users. To this end, access should be functionally equivalent, such that disabled end-users benefit from the same usability of services as other end-users, but by different means.'*

A report prepared for the European Commission in 2007, 'Measuring Progress of eAccessibility in Europe' (MeAC)[6] uses a similar definition:

> *'In the case of telephony, the basic eAccessibility yardstick is 'functional equivalence', whereby disabled people have access to the same level and quality of everyday telecommunications services (at the same price and with the same choice) as everyone else.'*

The consultation issued by BEREC in October 2010 proposes that 'equivalent' should mean '*equal access to and choice of electronic communications services*' for end-users with disabilities, '*albeit that this might be achieved in different ways for end-users with disabilities in comparison with other end-users.*'

3. Functional Equivalence: how should it be interpreted?

3.1 The primary characteristic of a conventional telephone conversation for end-users is that it takes place in real time and provides fast access to interactive and expressive communication. Of the solutions available for Deaf users to be able to access telephone services, only one can be considered functionally equivalent to a conventional telephone conversation, VRS.

Text Relay Services

3.2 At present, the primary telecommunications service in the UK for Deaf people is the Text Relay service operated by BT. However, it is awkward to use and as set out in the foreword to the 2009 Plum report '*...relies on technology which is 30 years old.*'

3.3 Text Relay cannot be considered functionally equivalent to conventional voice telephony:

(a) Text relay services require BSL users to communicate in their second language, English. To understand the implications of that, it is critically important to appreciate the differences between written / spoken English and BSL. Not only is meaning conveyed differently in sign language than in standard English; they are, in fact, different languages. A BSL user communicating via a text relay service is effectively having to communicate in a non-native, second language (written English). By contrast, when using VRS, Deaf individuals are able to express themselves more fully and naturally: using the facial expressions, gestures, and body language that are integral components of BSL and that are impossible to use when communication is restricted to text. The MeAC report states, '*people who rely on sign language*

[6] *MeAC - Measuring Progress of eAccessibility in Europe: Assessment of the Status of eAccessibility in Europe*, European Commission, October 2007.

as their first language may need or prefer signing with help of video telephony';

(b) In Ofcom's 2009 consultation paper, 'Access and Inclusion', reference is made to the fact that many Deaf people find text relay awkward and time-consuming. As a result, Deaf users report getting other people to make and receive calls on their behalf, or otherwise restricting the calls they make;

(c) Text relay services are much slower than voice communication and do not take place in real time. The time it takes a Deaf text relay user to type and read messages causes a delay and makes communication much more cumbersome. It does not allow a fluid conversation in which the participants can interrupt one another, respond instantly to news and so on. Standard voice telephony allows communication at a speed of 170 words per minute (wpm), compared to 30 wpm for text relay. VRS however allows an impressive 150 wpm. The Plum report found that VRS is three to four times faster than basic text relay, and '*offer[s] substantial improvements in terms of natural, fluid conversation and nuanced expression that conveys emotions and helps clarify the intention behind words*.' By contrast the report set out that text relay '*does not allow natural, fluid conversation'* and *'provides slow connection speed, typically 30 words per minute, which leads to low productivity at work and frustrates many users when used for social purposes.'*[7] The consultation issued by BEREC in October 2010 also recognised the slowness of text relay, using the example of the UK where '*because calls using the text relay service take longer than other calls, most providers [give] customers a rebate on these calls*';

(d) Text relay also suffers from a number of operational difficulties. A recent market research report prepared for Ofcom[8] found that the current text relay service lacks basic customer service:

> '*A total of 51 calls were made via text relay (approximately 6 per provider). There was a wide variety in the responses from individual call handlers. Some were extremely helpful and sympathetic, whereas some were blunt, or even came across as rude. On a number of occasions it appeared that the call handler just hung up on the call (this wasn't particular to any individual provider).*'

3.4 The text relay service currently provided, especially as modern communications technologies have developed, can be more readily compared with an end-user's experience of email or SMS text messaging. Even using this analogy, however, text relay fares badly as it is slower and less convenient. While these additional services and developments in communications are helping some in the Deaf community, they are no less restrictive for BSL users than text relay. For the majority of sign language users in the UK, BSL is their first language, not English. Forcing BSL users to use text-based technologies deprives them of the ability to communicate their true meaning. Deaf people should have the same suite of services available as hearing

[7] Plum report, p.1.

[8] Ofcom Disabilities Mystery Shopping – Main Report, prepared by BDRC-Continental, August 2010.

individuals so that they can pick up the telephone to speak to their bank, call a family member, or make an appointment to see the doctor.

Figure 1. Comparison of voice telephony, text relay services and video relay services

Feature	Voice telephony	Text relay services	Video relay services
Language of communication	End-users are able to express a range of emotions in the spoken language of their choice	Written English. As with email, SMS or instant messaging, it is difficult for BSL users to express feelings, emotions and humour. There are also significant language barriers for many Deaf individuals	End-users are able to converse in their first language, sign language, and express a range of emotions
Speed of communication	Approximately 170 wpm[9]	Approximately 30 wpm[10] (and dependent on typing skills of user)	Approximately 150 wpm[11]
Mobility	Choice of fixed line and mobile. The latter is fully portable to all areas within a network	Fixed to location of text equipment	Currently fixed line only in the United States but mobile solutions are in production and will be brought to market shortly

Video Relay Services (VRS)

3.5 For all of the reasons outlined above, many Deaf people who rely on sign language as their first language[12] consider VRS to be the only e-communications service that is functionally equivalent to voice telephony.

3.6 VRS calls are placed in the home or at work. They are held over a standard broadband Internet connection through specially designed, easy-to-use, videophones connected to a TV monitor. During a video relay call, the Deaf user sees a sign language interpreter on the monitor and signs to the interpreter, who then calls the hearing user via a standard telephone line and relays the conversation in real time.

[9] Plum report, page 19, Figure 5.1.

[10] Ibid.

[11] Ibid.

[12] In the United Kingdom, there are an estimated 50,000 to 70,000 users of BSL according to the Plum report.

Real time interpreting between sign and speech creates the functional equivalent of hearing-to-hearing communication. Please see Annex 1 for further information as to how VRS works.

4. Choice of services and providers: the role of competition and innovation

4.1 Article 7 empowers Member States to take 'specific measures' to ensure that disabled end-users can also take advantage of the choice of undertakings and service providers available to the majority of end-users.

4.2 Article 23a further bolsters Article 7 by empowering Ofcom to create circumstances in which disabled end-users are offered the choice of undertakings and services that are enjoyed by the majority of end-users.

4.3 We are delighted that the Government has embraced the principles of these changes, particularly following the comments of the Minister for Culture, Communications and Creative Industries' that *'[i]mplementing these changes should bring about better investment opportunities and encourage greater competition and innovation amongst electronic communications providers.'*[13]

4.4 The majority of end-users currently benefit from an array of choice in telephony services and in the undertakings which provide these services. The clear intention of the USD is to extend choice of this nature and degree to Deaf end-users.

4.5 European regulators have agreed[14] that two factors are deemed important in assessing equivalent choice for end-users with disabilities:

(a) having a range of service providers that provide accessible services to choose from; and

(b) being able to exercise their choice.[15]

4.6 Clearly, in the UK Deaf and hard of hearing users have neither of the above. They have only one service – Text Relay - and only one provider – the Universal Service Provider, BT.

[13] BIS Consultation, *'Implementing the Revised EU Electronic Communications Framework'*, p. 5.

[14] BEREC 'Electronic communications services: Ensuring equivalence in access and choice for disabled end-users', Public consultation, 11 October – 26 November 2010.

[15] Ibid. p. 31.

5. Question 9: Do respondents have any views on the proposed changes to the Universal Service Order?

Ensuring Functional Equivalence

5.1 The BIS consultation document refers to the changes to the European legislation, but does not address how they will be transposed in the UK. The consultation document suggests that the equivalence requirements are met by the provision of Text Relay. As outlined above, Text Relay does not provide equivalent access, a choice of relay services, or (currently) a choice of undertakings to Deaf and hard of hearing users.

5.2 We believe that the UK's Universal Service Order (USO)[16] must be amended and other changes introduced in order to:

(a) Update the definition of relay services to allow for video as well as text-based services;

(b) Encourage the introduction of VRS; and

(c) Create a competitive market in which the disabled benefit from the same choice of services and providers as currently enjoyed by the majority of users.

5.3 Please see Annex 2 which sets out two legally viable routes to achieving this.

5.4 The UK's implementing legislation, the USO, recognises that special measures must be taken to ensure access to and affordability of telephone services for end-users with a disability and that relay services must be made available. Disappointingly, however, it then defines relay services so narrowly as to deny Deaf people access to technology and services that would revolutionise their ability to communicate with those around them, namely VRS. Relay services are defined in Article 2 of the USO as a service which:

'*(a) provides facilities for the receipt and translation of voice messages into text and text into voice messages, and the conveyance of that text or voice message to the textphone of subscribers of a person providing a publicly available telephone service; and*

(b) has been approved as a text relay service by OFCOM.'

5.5 This leaves no scope for VRS. The word 'equivalent' is clearly imported from the USD and, as such, equivalence ought to be interpreted as 'functional equivalence', with 'the same usability of services'. Defining relay services so narrowly does not take account of different types of relay services available to Deaf people. It also does not ensure functional equivalence for those end-users who rely upon BSL as a first language. At the very least, the narrow definition of relay services is not in keeping with the USD's emphasis on consumer choice.

5.6 In Sorenson's view, the definition of relay services should be amended to allow VRS and could read:

[16] Electronic Communications (Universal Service) Order 2003 S.I. 2003 No. 1904.

'*(a) provides facilities for the receipt and translation of voice messages into text or British Sign Language (BSL) and/or text or BSL into voice messages, and the conveyance of that text, BSL or voice message to the text, video or audio phone of subscribers of a person providing a publicly available telephone service; and*

(b) has been approved as a ~~text~~ relay service by OFCOM.'

5.7 In Sorenson's experience of the US market, given the choice between text relay and video relay most users choose video relay. Of the estimated 225,000 users of VRS in the US, most were text relay users who have now switched to VRS.

Competition is vital

5.8 In order to bring about the best results for the Deaf community, Sorenson would support a system that encourages competition between providers of VRS. Particularly in light of the emphasis on providing a choice of undertakings to disabled end-users in Articles 7 and 23a, we assume that the UK Government and Ofcom would wish the UK market for relay services to be competitive. The advantages of competition within markets are well known and include improved quality of service, increased efficiency of operators, reduced costs and greater choice for consumers. Competition is also likely to encourage investment in research and development for specialised terminal equipment.

5.9 The competitive market for VRS established in the United States provides a ready precedent for the advantages of competition between providers of relay services. For example, the regulatory requirement for speed of answer is that 85% of calls must be answered within 2 minutes. As a result of competition, the average speed of answer is now 10 seconds. Competition has also resulted in the number of video phones available on the market for Deaf people growing from 1 to as many as 8.

5.10 We understand that there is a widespread preference for a competitive market among the Deaf community and among VRS providers in the UK, most recently demonstrated by TAG's[17] comments at a UK Council on Deafness conference in November 2010: *'Competition in the field of all telephone relay services is badly needed and would undoubtedly help to improve quality of service.'*[18]

5.11 The creation of a competitive market for universal VRS in the UK would drive significant investment by existing providers, and attract new entrants. The research by Europe Economics shows that a competitive market would create over 1,500 new interpreting jobs, and over 2,500 jobs in total.

5.12 In the United States, Sorenson has invested millions of dollars, in the development and training of our interpreters, and broader employee base. We envisage making proportionate investments in the UK if a sustainable platform for investment is created.

[17] http://www.deaftag.org.uk/

[18] http://www.deafcouncil.org.uk/docs/Ruth%20Myers%203.11.10.pdf

5.13 The UK has pioneered policies to introduce competition into many utilities *e.g.* gas, electricity and mainstream telecommunications. It is time to extend the benefits of competition to Deaf end-users of telecommunications services.

6. Question 10: Do respondents agree the approach outlined in paragraphs 189-193 is appropriate to implementing Article 23a(2) and encouraging the development of terminal equipment suitable for disabled users?

6.1 As question 10 refers to paragraphs 189-193 which cover other aspects of Article 23a we have taken the liberty of responding to the points raised in those paragraphs.

6.2 The consultation document notes at paragraph 190:

> *'[T]he text relay services and access to the emergency services that are mandated in the Framework are already available in the UK. The needs of consumers with disabilities are also catered for already through General Condition 15 and Universal Service Order special measures for end-users with a disability.'*

6.3 We agree that a text relay service is available in the UK, but this misses the point. The real issue is that only text relay is available. As noted in our response to question 9, this is no longer an acceptable interpretation of the obligations imposed by the European legislation and does not offer choice for disabled end-users. The USO must therefore be amended to include other types of relay services.

Case study: Emergency service provision via VRS in the US

In the US, sign language users are able to make emergency calls through their VRS provider and have the call, along with the callback number and Registered Location of the caller, automatically routed to an appropriate public safety answering point (911 call centre). In addition, all 911 emergency calls made through VRS receive priority attention so that they are answered by the first available VRS Communication Assistant ahead of all non-emergency VRS calls.

VRS provides a faster and more effective means of communication between the 911 call centre and the party experiencing the emergency than text based relay solutions, thus providing a better emergency response.

6.4 We support the amendment to the Communications Act 2003 proposed in paragraph 191 as it should help to clarify the current provisions contained in the General Conditions of entitlement.

6.5 In relation to paragraph 192, we of course welcome Ofcom's latest efforts to review relay services but it must be noted that Ofcom has commissioned up to nine similar consultations, reports and studies since 2004[19] - all concluding that the current

[19] (i) March 2010, 'Assisted living technologies for older and disabled people in 2030', Plum Consulting, (ii) March 2009 Ofcom consultation 'Access and Inclusion', (iii) July 2009, 'Voice telephony services for deaf people', Plum Consulting , (iv) January 2008, 'Captioned Telephony – Extension of 2006 research report – "Feasibility of Additional Telephone Relay Services"', (v) November 2006, 'Feasibility of Additional Telephone Relay Services', City University, (vi) March 2006, 'Review of the Universal Service Obligation',

telecommunications provision for Deaf people in the UK is lacking. In particular, the reports find that the existing text relay service is declining in use and as a technology is 30 years out of date. This decline is probably due to three factors: the cumbersome and slow nature of text relay, the shift in consumer expectations of telecommunications, and the growth of text-based services such as SMS and e-mail. This shift emphasises the fact that text relay is a poor equivalent for SMS and e-mail and should not even be considered as being equivalent to voice telephony, particularly when more advanced technology is now available. The latest Ofcom study is covering old ground, and is unlikely to throw any new light on the needs of the Deaf community.

6.6 In relation to paragraph 193 and question 10, we do not feel that the apparent emphasis on providing terminal equipment for Deaf people is appropriate. The key to providing equivalent access for Deaf individuals to telecommunications services is enabling and funding appropriate relay services. If a competitive market for relay services is set up as suggested in this submission, there will be an incentive to invest in research and development and develop adapted terminal equipment.

7. Question 13: The Government invites respondents' views and comments on the impact assessments and equality impact assessment which have been produced to support implementation of the revised electronic communications Framework.

7.1 We believe that the Impact Assessment: 'Universal Service Directive: Overarching Impact Assessment' does not go far enough in considering the positive impact of introducing equivalent access to telecommunications for Deaf people. At a time when budgets are being cut and a political emphasis is being placed on getting people back into the workforce, a change to the USO to mandate VRS would have a positive impact on the UK economy.

7.2 The assessment should consider the services for disabled users which are not currently provided in the UK and the impact of funding such services. In the case of Deaf end-users, it is not currently the case (as the Impact Assessment asserts) that '*the UK already provides many of the services...mandated in the Directive.*' Currently, only one such service is provided for Deaf end-users, Text Relay. VRS, in particular, should be considered as it provides a method of ensuring equivalent access to telecommunications services under Articles 7 and 23a. In addition, VRS, over many years of use in the US, has been shown to transform the lives of sign language users and those of hearing users who communicate with them.

7.3 To support the broader understanding of VRS in the UK, Sorenson Communications commissioned economic consultancy Europe Economics to conduct a detailed cost benefit analysis of introducing VRS in the UK. The key findings of that report include:

(a) Over ten years, VRS would create a net benefit to the UK economy of between £600 million and £1.1 billion;

(vii) June 2005, 'Telecommunications Statement (conclusions of the USO review)', (viii) January 2005, 'Universal Service Obligation Review Consultation' , and (ix) June 2004, Ofcom 'deaf and hearing impaired consumer and textphone study'.

(b) A competitive market for VRS would create over 2,500 new jobs for Deaf individuals, BSL interpreters, and for the wider UK workforce;

(c) VRS would yield over £6.4 million for the UK Exchequer during the first ten years of service by reducing welfare and public sector spending, and increasing tax and National Insurance revenues; and

(d) There would be second round effects on the economy as a whole and benefits to deprived local areas through the establishment of VRS call centres.

7.4 The report by Europe Economics noted a number of other improvements for sign language users and the hearing which have been evidenced in countries where VRS is widely available:

(a) Increased ability for Deaf entrepreneurs to establish and run companies;

(b) Ability for Deaf individuals to communicate directly with other Deaf people using videophones – approximately eight such calls are made for each VRS call in the US; and

(c) Benefits to hearing colleagues, friends and relatives of Deaf individuals who are able to communicate with Deaf people more easily and effectively.

7.5 We would like to invite BIS to review the findings of this report (at Annex 3).

7.6 We also believe that the 'Impact Assessment: Annex 1: Provisions on Access and Choice for Disabled Users' should be broadened to address the issue of terminal equipment more comprehensively. We agree that the e-Accessibility Forum could be of use in fostering new technological development and welcome its creation. However, such a forum does nothing to address the most crucial issue surrounding terminal equipment – funding. In the case of VRS, terminal equipment is already highly developed but is more expensive than equivalent equipment for hearing people. The assessment therefore needs to be revised to cover the issue of funding for terminal equipment for VRS.

8. Question 14: Do respondents have views on the technical and practical issues that Government will need to take into account when implementing the review, bearing in mind that many of the changes are mandated?

8.1 Please see Annex 2 which sets out two legally viable routes to implementing VRS.

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ANNEX 1

HOW VRS WORKS

Video Relay Services (VRS) is a proven technology and has been universally available in the US for many years, provided by several operators.

VRS calls are placed in the home or at work. They are held over a standard broadband Internet connection through specially designed, easy-to-use, videophones connected to a TV monitor. The Deaf user sees a sign language interpreter on the monitor and signs to the interpreter, who then calls the hearing user via a standard telephone line and relays the conversation.

ANNEX 2

CLIFFORD CHANCE LLP - A ROUTE THROUGH THE UK LEGISLATION TO A SUSTAINABLE FUNDING MODEL FOR VIDEO RELAY SERVICES (VRS)

3 December 2010

A ROUTE THROUGH THE UK LEGISLATION TO A SUSTAINABLE FUNDING MODEL FOR VIDEO RELAY SERVICES (VRS)

INTRODUCTION

The European Electronic Communications Framework[1] establishes the legislative framework for telecommunications services across the EU. It is implemented at a national level in the UK by the Communications Act 2003. There is scope for the UK to implement video relay services (VRS) through minor amendments to the current legislative framework.

To introduce a system for the provision of universal VRS in the UK which (i) sets up a competitive market where providers of VRS compete to deliver the service for Deaf end-users, and (ii) provides a source of funding that enables these users to access VRS at any time and at a cost no greater than that of a normal voice call, the following options are available:

- Option 1 below sets out the legally / technically simplest route that is most likely to deliver the ideal competitive market conditions and funding mechanism

- Option 2 offers an alternative approach.

The following does not consider all of the legally possible permutations for providing VRS and, instead, focuses on models which accord as closely as possible with the vision set forth above.

OPTION 1 – DELIVERY OF RELAY SERVICES THROUGH THE STRUCTURE OF UNIVERSAL SERVICE

- Step 1: Secretary of State amends the Universal Service Order (USO)

  The Secretary of State may amend the USO to alter the definition of relay services so that it includes VRS as well as other relay services. We understand that a change of this kind is planned in order to future-proof the legislation.

  While section 6(2)(c) of the USO would remain the same, the definition of relay services should be amended to read:

  "*(a) provides facilities for the receipt and translation of voice messages into text or British Sign Language (BSL) and/or text or BSL into voice messages, and the conveyance*

[1] The framework comprises the following directives (as amended): the Framework Directive 2002/21/EC; the Access Directive 2002/19/EC; the Authorisation Directive 2002/20/EC; the Universal Service Directive 2002/22/EC; and the e-Privacy Directive 2002/58/EC.

of that text, BSL or voice message to the text, video or audio phone of subscribers of a person providing a publicly available telephone service; and

(b) has been approved as a ~~text~~ relay service by OFCOM."

The definition of "textphone" in the USO will also need to be deleted to allow for the widest range of terminal equipment to be used to access relay services.

- Step 2: Ofcom designates specific Universal Service Providers (USPs) to provide relay services

Invite applications: Ofcom has the power to designate USPs under the Communications Act 2003. These providers must be "communications providers".[2] Communications providers include providers of an "electronic communications service"[3] – defined as "*a service consisting in, or having as its principal feature, the conveyance by means of an electronic communications network of signals, except in so far as it is a content service.*"[4] This definition could include relay services companies since they are, by providing relay services, sending signals down an electronic communications network to provide a service and are not providing content. Such providers should *a priori* not be excluded from being USPs.[5]

Choose providers: Ofcom is obliged to regulate for a procedure to designate USPs that is efficient, objective and transparent, as well as non-discriminatory.[6] In addition, Article 8 of the Universal Service Directive (USD) and its accompanying recitals offer guidance on how to make this designation.[7] They emphasise that the current approach taken by Ofcom in its designation of BT and Kingston as USPs need not be adhered to in an era of enhanced competition and choice in the telephony market.

Article 8 notes that Member States may designate different providers for different elements of universal service.

Recital 14 to Article 8 notes that: "*The development of greater competition and choice provide more possibilities for all or part of the universal service obligations to be provided by undertakings other than those with significant market power. Therefore, universal service obligations could in some cases be allocated to operators demonstrating the most cost-effective means of delivering access and services, including by competitive or comparative selection procedures.*"

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2 Communications Act 2003, section 66(2).

3 Communications Act 2003, section 405(1).

4 Communications Act 2003, section 32(2).

5 USD Article 8(2): *"When Member States designate undertakings in part or all of the national territory as having universal service obligations, they shall do so using an efficient, objective, transparent and non-discriminatory designation mechanism, whereby no undertaking is a priori excluded from being designated."*

6 Communications Act 2003, section 66(7).

7 USD, Article 8(1): *"Member States may designate different undertakings or sets of undertakings to provide different elements of universal service and/or to cover different parts of the national territory."*

Accordingly, it would be open to Ofcom (and indeed corresponds well with the USD) to designate a number of relay service providers as USPs that meet the requisite minimum specifications and offer value for money. An efficient, objective and transparent procedure would be for Ofcom to:

- put out a tender setting out minimum specifications for companies wishing to provide relay services; and

- designate multiple providers by means of a dutch auction to set the lowest cost at which they would be willing to meet the specifications. The cost per-minute for such services could then be set at the lowest rate offered by any single provider or, alternatively, the lowest rate at which a certain number of providers (*e.g.* three) are willing to provide a given type of relay service.

- Step 3: Funding options

  Having designated one or more providers as USPs for relay services Ofcom has two options as regards funding:

  - *Establish a fund:* it is likely that the universal service conditions would represent an "unfair burden" on the USPs (particularly specialist providers of relay services). However, Ofcom has the power to establish a fund (Universal Service Fund) to which telecommunications companies provide monies in order to fund this "unfair burden".[8] USPs would draw on the fund at the cost they agreed to in step 2 in accordance with the number of minutes they provide to disabled end-users.[9] The scope of the fund, its administrative body and the basis of contribution would all be open to Ofcom to determine under its powers in section 71 of the Communications Act 2003.[10]

  - *Allow USPs to recover costs directly*: the USPs designated by Ofcom as providers of relay services could recover their per-minute costs at the rate set under step 2, directly from telecommunications companies whose users make use of the service. The method has precedent in the current Designation of BT as the provider of text relay, where BT is allowed to recoup its costs from other providers according to the use made of the service by their customers.[11] The principle difference would be that the cost per-minute would already have been fixed by Ofcom's tender and dutch auction.

- Step 4: Review the Designation periodically

  To ensure that relay services are provided at the lowest cost and to ensure that new competitors can enter the market, Ofcom could perform a review of the Designation of USPs on a regular basis (*e.g.* every five years).[12] It would be open to Ofcom to run a new

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8 Communications Act 2003, section 71.

9 This offers a method for the distribution of funds that is "objective and transparent" and enhances competition, Communications Act 2003, section 71(6) (a) and (c).

10 Also see the authority in Articles 12 and 13 of the USD.

11 "Designation of BT and Kingston as Universal Service Providers, and the specific universal service conditions", p. 49.

12 Communications Act 2003, section 66(4) allows for such reviews.

dutch auction periodically to reassess the cost (and quality) of relay services to the Universal Service Fund or the telecommunications companies whose customers make use of the services.[13]

OPTION 2 – DELIVERY OF RELAY SERVICES THROUGH THE GENERAL CONDITIONS OF ENTITLEMENT

- Step 1: Secretary of State amends the USO

  The Secretary of State may amend the USO to alter the definition of relay services so that it includes VRS as well as other relay services. We understand that a change of this kind is planned in order to future-proof the legislation.

  While section 6(2)(c) of the USO would remain the same, the definition of relay services should be amended to read:

  "*(a) provides facilities for the receipt and translation of voice messages into text or British Sign Language (BSL) and/or text or BSL into voice messages, and the conveyance of that text, BSL or voice message to the text, video or audio phone of subscribers of a person providing a publicly available telephone service; and*

  (b) has been approved as a ~~text~~ relay service by OFCOM."

  The definition of "textphone" in the USO will also need to be deleted to allow for the widest range of terminal equipment to be used to access relay services.

- Step 2: Ofcom amends the General Conditions of entitlement (the "General Conditions") to obligate the provision of relay services

  The BIS consultation on the implementation of the revised framework envisages that the obligation in section 6 of the USO could be ensured by Ofcom either through the General Conditions imposed on all telecommunication companies or through the universal service obligations imposed on specific providers. We assume that this amendment would allow the provisions of section 6 (and the relevant definitions) to be implemented in full in the General Conditions.

- Step 3: Ofcom ensures a reliable service which meets a high specification

  Designation of approved providers: Ofcom has the power and the duty to determine a fixed list of relay service providers which meet its specifications.[14] One method of doing this would be to tender for relay service providers, setting the minimum standards they must meet. Multiple providers could then be chosen by means of a dutch auction to set the lowest price at which they would be willing to meet the specifications in the tender. Ofcom's oversight would only need to cover the chosen providers rather than every telecommunications company.

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[13] Communications Act 2003, section 66(5): "*The procedure to be followed in the case of every such review must be the procedure provided for in regulations made by OFCOM.*"

[14] USO, definitions.

- Step 4: Funding options

  - *Independently administered fund:* establish an independently administered fund to allow telecommunications companies to meet their obligations by paying into the fund. This, however, would require an amendment to the Communications Act 2003 to allow for a fund to be established for the purposes of funding certain obligations in the General Conditions.

  - *Billing telecommunications companies directly:* bill telecommunications companies individually for the minutes that their customers use the relay services provided by Ofcom approved providers.

- Step 5: Review the list of providers periodically

  To ensure that relay services are provided at the lowest cost and to ensure that new competitors can enter the market, Ofcom could perform a review of the list of relay service providers on a regular basis (*e.g.* every five years). It would be open to Ofcom to run a new dutch auction periodically to reassess the cost (and quality) of relay services to the independently administered fund or the telecommunications companies whose customers make use of the services.

THE EFFECT OF ARTICLE 12 OF THE AUTHORISATION DIRECTIVE

The USD and its accompanying recitals contemplate a number of possible funding models to facilitate the provision of universal service. Indeed, the USD provides specific authorisation for national regulators to impose charges to share "the cost of universal service obligations" as set out in Chapter II of the USD (including, under Article 7, the obligation to provide equivalent services to disabled end users).[15]

The recitals to the USD elaborate on the methods for funding Chapter II services and on what may not be funded by such methods. Recital 21, in particular, notes that, *"where a universal service obligation represents an unfair burden on an undertaking"*, it is *"reasonable for established net costs to be recovered from all users in a transparent fashion by means of levies on undertakings. Member States should be able to finance the net costs of different elements of universal service through different mechanisms, and / or to finance the net costs of some or all elements from either of the mechanisms or a combination of both."*[16]

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[15] USD, Article 13

"1. Where, on the basis of the net cost calculation referred to in Article 12, national regulatory authorities find that an undertaking is subject to an unfair burden, Member States shall, upon request from a designated undertaking, decide:

(a) to introduce a mechanism to compensate that undertaking for the determined net costs under transparent conditions from public funds; and/or

(b) to share the net cost of universal service obligations between providers of electronic communications networks and services.

2. Where the net cost is shared under paragraph 1(b), Member States shall establish a sharing mechanism administered by the national regulatory authority or a body independent from the beneficiaries under the supervision of the national regulatory authority....."

[16] USD, Recital 21.

Recital 21 goes on to state, however, that "*Any funding mechanism should ensure that market participants only contribute to the financing of universal service obligations and not to other activities which are not directly linked to the provision of the universal service obligations.*"

There is therefore clear authority for the imposition of a variety of funding models under the USD. However, the European Commission has, in recent infringement proceedings against France and Spain, interpreted Article 12 (Administrative charges) of the Authorisation Directive extremely broadly, to bring it into conflict with the provisions of the USD.[17]

Article 12 stipulates that "*Any administrative charges imposed on [telecommunications] undertakings... shall: a) in total, cover only the administrative costs...*" incurred in the provision and enforcement of regulation.

Following the reasoning of the Commission strictly, it would seem that it regards any levy imposed on telecommunications providers as being contrary to Article 12 unless it solely relates to administrative costs.

Article 12 of the Authorisation Directive should not be interpreted in such a broad way. Indeed, under the Commission's interpretation, Article 12 would deprive Article 8 of the USD of any validity. As such, although there remains some risk of infringement proceedings being initiated by the Commission in the context of implementing a funding model for relay services, the risk is only moderate. Indeed, were the interpretation of Article 12 to come before the Court of Justice of the European Union in this context, the Court would be expected to uphold the validity of the provisions of the USD.

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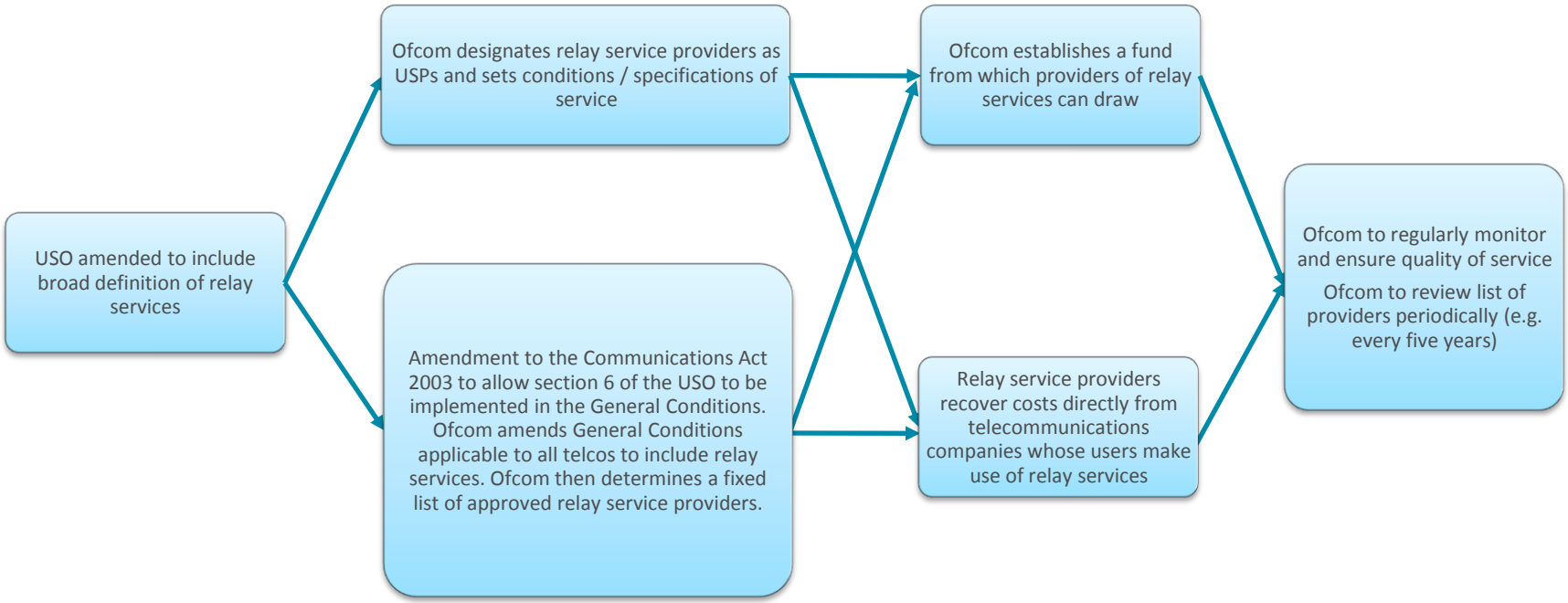
[17] Commission Press Release IP/10/1211: *"the charges in France and Spain, which were introduced in order to compensate for the loss of revenue from paid advertising on public TV channels, are incompatible with EU telecoms rules. Under these rules (in particular Article 12 of the telecoms Authorisation Directive (2002/20/CE)), charges can be levied on telecoms operators to cover only certain administrative and regulatory costs (mainly authorisations and regulatory functions) and should be objective, transparent and proportionate. Moreover, interested parties must also be consulted in an appropriate manner of any amendments to charges applied to telecoms operators."*

Implementing relay services through amendments to UK legislation



ANNEX 3

EUROPE ECONOMICS – VIDEO RELAY SERVICES IN THE UK

Video Relay Services in the UK

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TABLE OF CONTENTS

1 EXECUTIVE SUMMARY

1.1 A Video Relay Service (VRS) allows sign language users to communicate with hearing people, via a sign language interpreter, using videophones and similar technologies. At industry level, VRS has enabled an estimated 250,000 American Sign Language users to access US telecommunications in a way that is functionally equivalent to the access enjoyed by hearing individuals.

1.2 Sorenson considers that VRS could deliver significant benefits to British Sign Language (BSL) users in the UK and has commissioned Europe Economics to provide:

(a) a quantitative analysis of the costs and benefits of introducing VRS; and

(b) a recommendation for a funding mechanism for VRS in the UK.

Costs and benefits of VRS

1.3 Europe Economics conducted an independent analysis of the potential costs and benefits of VRS for the UK as a whole, not just the costs and benefits that would arise from Sorenson's participation in a UK market for VRS. The analysis is based in part on data provided by Sorenson and also on data uncovered during desk research undertaken by Europe Economics.

1.4 A conservative approach has been taken so as not to overstate the potential benefits of the service. For instance, we assume that 38,000 BSL users would access VRS in the UK, a figure that is below some estimates of the number of fluent users of BSL in the UK.[1]

1.5 The provision of VRS in the UK would not only benefit BSL users but also hearing individuals. VRS calls can be initiated by either a hearing individual or a BSL user so that the service would allow hearing individuals to contact a Deaf friend, relative or colleague with greater ease and at lower cost than is possible at present.

1.6 Specific benefits that are quantified in this report include improved productivity at work, increased employment and health benefits to BSL users. We also estimate the impact that the provision of VRS might have on transfers between individuals and the government, through taxes and welfare payments. Funded as we recommend, VRS could lead to savings for the taxpayer as a result of reduced unemployment and improved health of Deaf individuals.

1.7 A summary of the potential costs and benefits of VRS in the UK which it has been possible to express in monetary terms is presented in Table 1.1 below. It shows a significant net benefit.

[1] For example, Plum Consulting, in a 2009 report to Ofcom, estimated that there are approximately 50,000 to 70,000 fluent BSL users in the UK.

Table 1.1: Monetised Economic Costs and Benefits of VRS

	Present value over ten years	
	Excluding multiplier effects	*Including multiplier effects*
Costs		
Contact centre setup	£6.3m	£6.3m
Head office setup	£2.0m	£2.0m
Recruitment	£10.2m	£10.2m
Training	£4.9m	£4.9m
Videophone provision	£60.6m	£60.6m
Contact centre ongoing (low)	£487.9m	£487.9m
Contact centre ongoing (high)	£575.6m	£575.6m
Head office ongoing (low)	£162.6m	£162.6m
Head office ongoing (high)	£191.9m	£191.9m
Total cost (low)	**£734.5m**	**£734.5m**
Total cost (high)	**£851.5m**	**£851.5m**
Benefits		
Productivity	£12.5m	£12.5m
Employment (direct)	£551.2m	£551.2m
Employment (multipliers)	-	£385.9m
Health benefits	£898.5m	£898.5m
Total benefits	**£1,462.3m**	**£1,848.1m**
Net benefit (low cost)	**£727.7m**	**£1,113.6m**
Net benefit (high cost)	**£610.8m**	**£996.6m**

Note: Figures presented in the table may not sum to totals exactly because of rounding. Estimates are subject to a margin of uncertainty, as discussed in the text, but are presented to one decimal place for clarity.

1.8 The table above demonstrates that VRS would have a significant net benefit taking into account only those benefits that it has been possible to quantify. There are, however, numerous other benefits of VRS on which we have not been able to place a monetary value, including:

(a) benefits to hearing colleagues, friends and relatives of Deaf individuals that would be able to communicate with the Deaf more easily and effectively;

(b) increased ability for Deaf entrepreneurs to establish and run companies;

(c) improved ability for the Deaf to convey emotions and to be expressive in telecoms;

(d) ability for Deaf individuals to communicate directly with other Deaf people using videophones — approximately eight such calls are made for each VRS call in the US;

(e) improved self-confidence and increased independence for BSL users; and

(f) reduced public sector spending on sign language interpreters.

1.9 Accounting for these benefits would further reinforce the conclusion that VRS would deliver a substantial net benefit to the UK economy.

2 COST BENEFIT ANALYSIS OF VRS IN THE UK

2.1 A key purpose of this project is to provide a cost benefit analysis of VRS in the UK. Our approach to the cost benefit analysis has comprised desk research and the utilisation of information provided by Sorenson.

2.2 Before presenting cost and benefits estimates it is important to define two concepts that will be used throughout this section: present value and full time equivalence.

Present value

2.3 We present costs and benefits in 'present value' terms over a forecast period of ten years. It is standard practice for policy decisions to be made on the basis of the net present value of the policy or initiative (i.e. present value of benefits minus present value of costs) where costs and benefits occur in different time periods.

2.4 Present values are calculated by 'discounting' future streams of costs and benefits. At the most basic level, the rationale for discounting is based on the principle that, in general, people would rather receive goods and services now rather than later. This is known as 'time preference'. The Treasury has recommended that a real (i.e. without inflation) discount rate of 3.5 per cent should be used when calculating present values and we use this value in our calculations.

Full time equivalence

2.5 Full time equivalence is a measure of the number of hours that an individual is in employment relative to the number of hours worked by a full time employee. For example, if a full time employee works for 38 hours per week, an individual that works for 19 hours per week would have a full time equivalence of 0.5. Expressed differently, two workers employed for 19 hours each are equivalent to one full time employee.

2.6 Full time equivalence is important in the context of assessing the output gains arising from the provision of VRS in the UK. Indeed, the output gains of 10 full time employees would be twice that of 10 employees with a full time equivalent of 0.5. It is hence important to base some calculations on the rise in full time equivalent employment rather than the rise in the number of employees.

2.7 The Office of National Statistics has noted that there is "no agreed international definition as to the minimum number of hours in a week that constitute full-time or part-time work and the approach differs depending on the data source used".[2] In this work, we assume that a typical full-time employee works for 37.5 hours per week.

[2] See http://www.ons.gov.uk/about-statistics/user-guidance/lm-guide/concepts/employment/related-concepts/contract-status/index.html

Costs

2.8 Previous estimates of the costs of providing VRS in the UK, discussed below, have focussed on the per-minute (unit) cost. To some extent, this approach to cost measurement is useful as it permits a comparison of the costs of different relay services, but there are certain drawbacks. In this paper, we first present a review of VRS unit cost estimates and then attempt to quantify the costs of providing the service using an alternative approach.

Unit cost estimates

2.9 Estimated unit costs per minute of providing different relay services in the UK are presented in Table 2.1 below.

Table 2.1: Unit costs of relay services

	Cost per minute (£)		
	Estimate based on UK information[3]	Estimate based on US information[4] ($1.4/£)	Estimate based on US information[5] ($1.56/£)
Basic text relay	0.76	0.93	0.83
Video relay	2.50[a]	2.85[b]	2.56
Captioned telephony	2.00[c]	0.95	0.85

a - Assuming large scale operation; b - FCC estimate rather than actual compensation; c - Teletec estimate for small scale operation

2.10 It can be seen from the table above that the cost per minute of VRS is the greatest of the three relay services considered. However, this does not imply that the total cost of VRS would be greater than other relay methods because of differences in the number of words per minute that is possible with each relay service. Indeed, it has been reported that a conversation speed of 30 words per minute is possible with text-relay, compared with 150 words per minute with VRS and 170 words per minute with standard voice telephony.

2.11 The impact of conversation speed on service cost can be clearly illustrated by way of example, based on estimated costs for the UK. Consider a conversation of 300 words. Using text relay, this conversation would take ten minutes at a cost of £7.60 whereas the conversation would take two minutes at a cost of £5.00 using video relay.

2.12 The quality of conversation is also enhanced through the use of VRS as it allows for nuanced expression and increased ability to convey emotion.

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3 Plum Consulting report for Ofcom (2009), "Voice telephony services for Deaf people", Page 23. Available at http://stakeholders.ofcom.org.uk/binaries/research/telecoms-research/voice_telep.pdf.

4 Plum Consulting report for Ofcom (2009), "Voice telephony services for Deaf people", Page 23. Available at http://stakeholders.ofcom.org.uk/binaries/research/telecoms-research/voice_telep.pdf.

5 Europe Economics calculation, based on US estimates from the Plum report but updated with the current (18/08/2010) $/£ exchange rate

Compensation rates

2.13 Compensation rates in the US lie somewhat above the estimated unit cost of providing VRS because of the need for providers to invest in new technologies so as to improve the service available to their customers and to fund Deaf-Deaf (or point to point) calls for which providers are not compensated. The same investment needs would apply in the UK and hence the reimbursement rate of providers would need to lie above £2.50 per minute. Based on the simple example above, it can be seen that it would be cheaper to provide VRS than text relay for any compensation rate for VRS below £3.80 per minute.

2.14 Hence, for compensation rates below £3.80 per minute, VRS could be justified on cost grounds alone, without even accounting for the many additional benefits of VRS (discussed below) as compared with text relay. Once the additional benefits of the service are taken into account, VRS could be justified for compensation rates of more than £3.80 and Sorenson's estimated funding requirement of £4 per minute is likely to be justified on this basis.

2.15 Based on an assumption that the compensation rate per minute of interpreting would be approximately £4 per minute in the first year and would decrease annually by 1 per cent in real terms, Sorenson have estimated the total funding requirement for the first five years in the UK to be as shown in Table 2.2 below.

Table 2.2: Funding requirements for VRS in the UK

	Year 1	Year 2	Year 3	Year 4	Year 5
Installations	7,635	14,576	19,631	29,842	38,000
Annual VRS Minutes	6,251,528	11,933,517	17,403,625	23,628,516	30,790,152
Total Funding	£25,006,113	£47,256,727	£68,229,170	£91,706,900	£118,307,587

2.16 For the purposes of our work, we assume that the funding requirement remains fixed at around £118.3m per annum from year five onwards (i.e. we assume that an increase in minutes of use offsets the annual 1 per cent reduction in reimbursement rates).

2.17 On this basis, the present value of the funding requirement over ten years is approximately £785.7m. The USO currently costs BT between £57m and £74m per annum, or between £491m and £637m measured in present value terms over ten years.

Alternative approach

2.18 As noted above, previous estimates of the cost of VRS provision in the UK have focussed on costs per minute without presenting a total cost estimate. We consider that it is attractive to estimate total costs in this paper, and to use a bottom-up methodology because it allows for a clear breakdown between one-off and ongoing costs, can account for the fact that investments are 'lumpy' and the fact that for any given infrastructure, the marginal cost of providing the service would be somewhat below the average cost.

2.19 There are four categories of costs that should be considered in this analysis:

(a) one-off costs of setting up the infrastructure for VRS;

(b) one-off recruitment and training costs;

(c) ongoing costs of providing hardware such as videophones to VRS users; and

(d) ongoing costs of operating the service.

2.20 Experience suggests that the costs of establishing VRS would be significant.

One-off set up costs

2.21 Several different costs would be incurred by VRS providers before the service could begin operation, including property costs, infrastructure costs, recruitment costs and training costs.

Property and infrastructure costs

2.22 At present, there are approximately 140 VRS interpreting centres in the US for the industry as a whole. These centres are spread across the country, reflecting the fact that there is a limited supply of American Sign Language interpreters in any given locality. Whilst the UK is a fraction of the area of the US, and has a population of some 62 million as compared to 310 million in the US, it would nonetheless probably be necessary for VRS providers to establish a number of interpreting centres across the country. (In both countries there are minorities who do not speak fluent English, but that is an issue beyond the remit of this report.) Sorenson has estimated that an industry total of 30 contact centres would be required in the UK, with an average of 20 to 25 seats. Some centres would probably be smaller and some larger, depending largely upon the supply of interpreters in the local area.

2.23 At first sight, this may seem to be a surprisingly large number of contact centres given the geography of the UK, and it would appear to be more efficient to operate the service with fewer contact centres. There is, however, a limited supply of BSL interpreters and VRS providers would not wish to encourage interpreters to relocate, as this could risk leaving some regions of the country without access to face-to-face interpreting services.

2.24 A similar concern has driven the employment pattern of interpreters observed in the US — around 80 per cent of interpreters work part-time for VRS providers and devote the remainder of their time to providing non-VRS interpreting services, also known as community interpreting. To ensure that interpreters remain able to provide interpreting services for their local communities it would be necessary to establish around 30 contact centres in the UK. Initially, contact centres would likely be established in the main cities and regional contact centres would follow as usage of VRS increases.

2.25 Sorenson has estimated that a total of 2,053 interpreters would eventually be required to provide VRS in the UK, the vast majority of which would work part-time. This implies that approximately 68 interpreters would work at each contact centre, on average. Based on

these assumptions, the set-up cost for each contact centre is estimated to be between £200,000 and £250,000.[6] We use the average of these figures (£225,000) in subsequent analysis. These upfront costs would be paid for by VRS providers, and presumably recovered in the overall cost of the service once it is established.

2.26 We have assumed that six contact centres would be established in the first year of the service and that additional contact centres would be established as the minutes of usage increase. For simplicity, we have assumed that a further six contact centres would be established in each of the first five years of operation. On this basis, the present value cost of establishing contact centres is approximately £6.3m.

2.27 In addition to contact centres, VRS providers would need to establish a head office in the UK. The head office might be located in the same building as one of the contact centres and would contain several business functions, including the finance group, administrative services, HR and so on.

2.28 Sorenson has estimated that approximately 200 people would be required to fulfil these roles across all VRS providers. Assuming that there would be four main VRS providers in the UK, this implies that the average head office would have 50 employees, all of whom would work full time and hence 50 seats would be needed in the head office. Using the estimated cost of setting up a 20 seat contact centre (£200,000) and grossing it up to the number of seats required in head office, the cost of establishing each head office would be approximately £500,000. Therefore, the total cost of establishing UK head offices for VRS providers would be approximately £2.0m. It is assumed that this cost would be incurred in the first year of operation and hence the present value of this cost is £2.0m.

Recruitment

2.29 At present, there are 519 interpreters on the UK Register of Sign Language Interpreters.[7] Sorenson envisage that 2,053 interpreters would eventually be required to operate VRS in the UK and hence it would seem that a significant recruitment and training programme would be required. However, based on its experience in the US, Sorenson estimates that more than 2,053 individuals already have the basic skills to work as VRS interpreters in the UK and hence the recruitment problem may not be as significant as it first appears. Many of these individuals are not registered as interpreters at present because of a lack of available jobs and hence some would be employed in alternative professions. VRS would create jobs for those with the skills to be interpreters.

2.30 The total number of jobs created as a direct result of the establishment of VRS in the UK would be greater than 2,053. Interpreters comprise 80 per cent of Sorenson's US workforce and the ratio is thought to be similar for other providers.

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6 The estimates were provided by Sorenson in US dollars and converted at an exchange rate of $1.5/£1

7 The National Registers of Communication Professionals working with Deaf and Deafblind People Registration Update May 2010, available at http://www.nrcpd.org.uk/registration_updates.php

2.31 The ratio of interpreters to total employees would probably be slightly higher in the UK as most technological development and testing would likely remain in the US for those providers that are already active in the US market. Approximately 1.8 per cent of Sorenson's North American workforce is in its development and testing department and, stripping these individuals out, the number of interpreters as a percentage of all staff is approximately 82 per cent. We assume that this figure would apply in the UK and hence it would be necessary to recruit around 2,504 people to operate the service in the UK.

2.32 Although many of these employees would be expected to work part-time, there is little reason to believe that recruitment costs would be significantly lower for part-time employees than for full time employees. Therefore, we bundle together part-time and full time employees for the purpose of estimating recruitment costs. The Chartered Institute of Personnel and Development (CIPD) has estimated that the median total cost of recruitment is £4,333 per employee.[8]

2.33 Sorenson has provided estimates of the number of interpreters that would be required in each of the first five years of operation. To estimate total recruitment costs and the present value of this cost, we have assumed that the number of staff recruited in each year is approximately 1.22 times the number of interpreters recruited. On this basis, the present value cost of recruitment is approximately £10.2m. The greatest annual cost (£3.5m) would be incurred in the first year of operation.[9]

Training

2.34 As noted above, many individuals who would enter employment as VRS interpreters are currently likely to be employed in other professions. Whilst these individuals already possess many of the skills required to be a VRS interpreter they would need to undertake some training to polish these skills.

2.35 To estimate training costs, we have reviewed courses that are currently available in the UK for those with good BSL skills, defined as NVQ Level 3 BSL (or equivalent). Three qualifications are currently available that lead to full membership of the Register of Sign Language Interpreters:[10]

(a) University of Central Lancashire/SLI Postgraduate Diploma in BSL/English Interpreting and Translation;

(b) University of Leeds Postgraduate Diploma/MA in Interpreting: BSL-English; and

(c) NVQ Level 4 in Interpreting (BSL/English).

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8 CIPD, "Annual Survey Report 2007 Recruitment, retention and turnover".
9 These figures exclude any recruitment costs that would arise as a result of staff turnover.
10 See http://www.slilimited.co.uk/qualifications

2.36 The cost of the university courses ranges from £3,000 to approximately £4,000 whilst the NVQ route is significantly more expensive. We assume that the cost of training provided by VRS providers would be no more costly than a university course and hence assume that training costs would be £3,500 per interpreter.

2.37 Not all interpreters would require training as some are already employed as interpreters. We assume that those currently on the UK Register of Sign Language Interpreters would not require training and that these individuals would be the first to secure jobs with VRS providers. Therefore, 1,534 individuals would require training.

2.38 On this basis, the present value of training costs is £4.9m. The annual cost is lowest in the first year (since the majority of those recruited are already employed as interpreters) and highest in the second year (as usage of VRS increases significantly).

Summary of one-off costs

2.39 The main one-off costs that would be incurred by companies seeking to provide VRS in the UK would be associated with recruitment and training of staff and the establishment of contact centres. The total present value of one-off costs is estimated to be £23.0m.

Ongoing costs of providing hardware to VRS users

2.40 Sorenson provides videophones free of charge to Deaf people in the US and would expect to do the same in the UK. The cost of videophone provision is, hence, borne by VRS providers.

2.41 In 2007, TAG, which works to raise awareness of Deaf issues, stated that videophones in the UK were available from £600, excluding installation costs.[11] If VRS were to operate in the UK, each service provider would employ Deaf individuals to install videophones and to provide training to recipients of the phones. Assuming that installers would work in their local area, it would be reasonable to assume that each installer could conduct four installations per day. This assumption is based on 90 minutes completing the installation and training and an average of 30 minutes travelling between appointments.

2.42 Assuming that each installer would earn a wage of £15 per hour and that no other materials are required, the cost of installing the videophone is £30 plus petrol costs of, say, £2.[12] We assume that videophones would need to be replaced every three years and hence installers would always be in gainful employment.

2.43 Sorenson has estimated the number of BSL users that would have access to VRS in each of the first five years, reaching the anticipated long-term usage rate of 38,000

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11 http://www.tagcomm.org.uk/Newslett/sequel07.htm

12 The petrol cost estimate assumes that the fuel cost is £5 per gallon, the distance travelled in 30 minutes is 20 miles and the vehicle has a fuel economy of 50 miles per gallon.

individuals by the fifth year. Based on these assumptions, the present value of the cost of videophone provision over ten years is approximately £60.6m.

Ongoing costs of operating the service

2.44 Sorenson currently employs approximately 6,000 people in the US, around 80 per cent of whom are interpreters. Interpreters must be hearing individuals and fluent in sign language. In 2008, 80 per cent of interpreters worked part-time, typically for between 10 and 20 hours per week.[13] Taking the mid-point of this range and assuming that a full working week is 37.5 hours, the full time equivalent number of interpreters is 2,600.

2.45 It has been estimated that a pool of 2,053 interpreters would eventually be required in the UK. Assuming that working-time characteristics would be the same as in the US, the number of full time equivalent interpreters would be 1,068. Assuming, as above, that 30 contact centres would eventually be established in the UK, the number of full time equivalent interpreters per contact centre would be approximately 36.

Efficiency

2.46 It is worth noting that on the basis of forecast VRS minutes and interpreter numbers, each full time equivalent interpreter would be engaged in interpreting activities for 29,000 minutes per year, or approximately 28 per cent of their working time.[14] At first sight, this statistic appears to indicate that the forecast efficiency of VRS is low and that there is significant room for increasing the proportion of working hours spent on interpreting activities.

2.47 We understand, however, that an interpreter efficiency rate of around 25 per cent is typical for VRS providers in the US. There are a number of reasons for this:

(a) interpreting is an intensive activity and each interpreter is required to take a break of ten minutes per hour;

(b) VRS providers in the US are required to provide a functionally equivalent telecommunication service and hence must operate the service through the night. Night-time efficiency levels are significantly lower than those during the day due to smaller and more variable call volumes; and

(c) VRS providers in the US are reimbursed only for the time at which a conversation is taking place and not for the time it takes to set-up and end the call, or the time spent waiting for the next call to be allocated to the interpreter. The set-up time and waiting time, in particular, can be significant.

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[13] http://www.sorenson.com/press/images/good/American%20Executive-PDF-logo.pdf

[14] Calculation assumes a working day of 7.5 hours and 230 working days per annum

2.48 Taking these facts into account, a forecast efficiency rate of 28 per cent for VRS in the UK (assuming that the service operates for 24 hours per day) is plausible. Additional efficiency gains would be possible if the service were provided only for limited hours of operation.

Costs

2.49 The estimated cost of operating VRS contact centres in the UK is based on Table 2.3 below, which shows the typical split of running costs for a non-VRS contact centre in the UK during 2004. We assume that this cost breakdown has remained broadly accurate over time and is valid for VRS as well as telephone contact centres.

Table 2.3: Operating budget expenditure for UK contact centres

Expenditure type	Percentage of operating expenditure
Staff salaries and employer costs	63.7%
Rent	6.2%
Utilities	4.5%
IT	9.5%
Telecoms	7.5%
Management	8.6%

Source: DTI (2004), "The UK Contact Centre Industry: A Study", Page 118

2.50 To estimate the lower bound of contact centre running costs, we assume that each full time interpreter earns the median UK wage of £25,428 per annum. We assume that employers incur additional employment costs equal to 33 per cent of each employee's salary. On this basis, the total annual cost of running each contact centre would be approximately £1.9m. If it is assumed that interpreters are better paid than the median employee, earning a salary of £30,000 per annum, the annual operating cost for each contact centre would be £2.2m.

2.51 These estimates lie within the range of Sorenson's estimates, which are based on their US experience. Sorenson has estimated that annual ongoing costs of contact centres in the UK to serve a forecast 38,000 VRS users would be between £1.8m and £2.25m.[15] It is hence comforting that two separate methodologies have resulted in cost estimates within the same ball park, based on the same assumptions concerning scale of provision.

2.52 Using our estimates based on UK information, the total running cost of VRS contact centres would be between £56.7m and £66.9m per annum. The present value of this cost over ten years would be between £487.9m and £575.6m.

[15] The lower estimate assumes that there would be 20 seats per contact centre whilst the upper estimate assumes there would be 25 seats.

2.53 In addition to the cost of operating contact centres, further ongoing costs would be incurred at the head offices of VRS providers. It was assumed above that a typical head office would contain 2.5 times the number of seats as a typical contact centre. Assuming that per employee running costs are broadly similar to those of running the contact centre we can estimate that the annual running cost for each head office would be between £4.7m and £5.6m and hence total cost would be between £18.9m and £22.3m. The present value of this cost over ten years would be between £162.6m and £191.9m.

Summary of ongoing costs

2.54 Based on the assumptions above, total ongoing costs for the provision of VRS in the UK would be between £711.1m and £828.1m, measured in present value terms over ten years.

Economic Benefits

2.55 The provision of VRS in the UK would benefit not only BSL users but would also deliver significant benefits to hearing individuals. The service would allow hearing individuals to contact a Deaf friend, relative or colleague with greater ease and at lower cost than is possible at present. Indeed, VRS calls can be initiated by either a hearing individual or a BSL user.

2.56 Having noted that VRS delivers significant benefits to both hearing and Deaf individuals, a number of more specific benefits of the service can be identified. These include:

(a) increased speed of telecoms communication, creating greater productivity at work and additional leisure time, primarily for the Deaf;

(b) employment of Deaf people by VRS providers as equipment installers and trainers, leading to reduced welfare spending and increased tax and National Insurance revenues;

(c) employment opportunities for hearing individuals as VRS interpreters;

(d) improved employment possibilities and reduced unemployment, which could lead to better matching of skills to jobs and increased productivity, primarily for the Deaf;

(e) second-round effects to the economy as a whole and benefits to deprived local areas through establishment of VRS interpreting centres;

(f) increased ability for Deaf entrepreneurs to establish and run companies;

(g) ability for Deaf individuals to communicate directly with other Deaf people using videophones (BSL interpreters are not required for this type of communication and approximately eight such calls are made for each VRS call in the US);

(h) improved skills for BSL interpreters through training programmes provided by VRS providers;

(i) benefits to colleagues, friends and relatives of Deaf individuals due to increased ability to communicate effectively;

(j) ability for BSL users to use their first language, which allows them to convey emotions and to be expressive when communicating using the telecommunications network;

(k) improved self-confidence and increased independence for BSL users; and

(l) reduced cost of interpreting and text relay services and hence lower public sector spending and costs incurred by Universal Service providers.

2.57 There is no simple method of quantifying all of the benefits that VRS would deliver to Deaf users, hearing recipients of calls, businesses and society as a whole. However, we make use of innovative analytical techniques to quantify these benefits, as far as possible, in the remainder of this section.

Improved productivity at work

2.58 It has been estimated that the UK text relay service currently has 11,000 regular users that generate a total of eight million minutes of use per annum.[16] This suggests that each text relay user engages the service for 727 minutes per annum, on average. Assuming that approximately 50 per cent of these minutes are made at work for each employed individual and given a Deaf employment rate of 68.4 per cent, the total number of text relay minutes at work is 2.74 million, or around 364 minutes per employed text relay user.

2.59 Using VRS, it is possible to communicate at a speed of 150 words per minute (wpm), compared with 30 wpm for text relay and 170 wpm for standard voice telephony.[17] Given this, the equivalent of 364 text relay minutes for an employee using VRS would be 73 minutes.

2.60 One measure of productivity is value added per employee, which is estimated to be £68,782 on average in the UK.[18] Assuming that the individual works for 7.5 hours per day, 230 days per annum this productivity saving is worth £194 per Deaf employee, per annum. The total saving to UK businesses is, hence, nearly £1.5m per annum or £12.5m measured in present value terms over ten years.

[16] Plum Consulting (2009), "Voice telephony services for Deaf people", Page 9.
[17] Plum Consulting (2009), "Voice telephony services for Deaf people", Page 19, Figure 5.1.
[18] See http://www.innovation.gov.uk/value_added/default.asp?page=76

Improved employment possibilities

2.61 According to the RNID, in 2002 the unemployment rate of the severely and profoundly Deaf was four times the national average.[19] Assuming that this relationship still holds, the current unemployment rate of the severely and profoundly Deaf would be 31.6 per cent.[20] Given that the unemployment rate appears to increase with severity of disability, it is reasonable to assume that the unemployment rate of those whose first language is BSL is somewhat above that estimated for all severely and profoundly Deaf. However, as we wish to be conservative in our estimates, we will use the figure of 31.6 per cent in this work.

Employment opportunities with VRS providers for Deaf and hearing individuals

2.62 We estimated above that 1,068 full time equivalent interpreters would be required to operate VRS in the UK. We estimated above that approximately 18 per cent of the UK VRS workforce would be employed in non-interpreting roles and hence the total number of full time equivalent employees of VRS providers would be 1,302.

2.63 It should be noted that some of those that would enter employment with a VRS provider may leave an existing job to take up their new role. However, some of these vacated roles will be filled by other individuals whilst in other cases the individual would simply increase the number of hours they work and hence there would be no 'displacement effect'. Nonetheless, there may be some individuals that reduce or end their working hours in an existing job in order to become employed by a VRS provider and this job is not filled by another individual. This would be a 'displacement effect' of VRS.

2.64 The size of any such displacement effect is unknown, but likely to apply only to currently registered interpreters, who may reduce the number of hours they spend on face-to-face interpreting, especially if demand for this service falls. Newly qualified interpreters and those entering non-interpreting roles are likely to be unemployed at present or to have their existing roles filled by another individual (for example, a vacated secretarial job would probably be filled by someone else). For the purposes of this analysis we have assumed that displacement effects would apply for 10 per cent of FTE jobs created by VRS providers and hence net direct job creation as a result of VRS would be 1,172.[21]

2.65 Some of these jobs would be taken by Deaf people. As of April 2010, 42 per cent of Sorenson's US workforce (excluding interpreters) are Deaf, the majority of whom are videophone installers and provide training of how to operate the videophone and use

[19] http://www.cabinetoffice.gov.uk/media/cabinetoffice/strategy/assets/rnid3.pdf

[20] Based on National Statistics estimate of 7.9 per cent unemployment rate in the three months to April 2010.

[21] It should be noted that a somewhat greater displacement effect (also known as a re-absorption factor) is used in some standard analyses of UK employment impact. We consider that a lower factor is appropriate in this case because of the high unemployment rate of the Deaf (and hence the vast majority are likely to enter employment, rather than switch jobs), because of the specific skill attributes required of interpreters, and because there will remain a need for community interpreting services in many situations.

VRS.[22] Assuming that this characteristic would apply in the UK, 89 Deaf people (full time equivalent) would find employment with VRS providers.

Employment opportunities facilitated by VRS

2.66 VRS would certainly allow Deaf individuals greater access to a range of jobs than they enjoy at present. Apart from the jobs created by VRS providers, the primary effect is most likely to be one of intensifying competition for jobs between Deaf and hearing individuals.

2.67 The fact that there is intensified competition for jobs is, in itself, a benefit to the economy. If VRS enables a Deaf individual to compete for, and secure, a job that would not have been available to them otherwise, it must be that they are better qualified for the job than the hearing individual. In this case, VRS has led to an increase in the average skill level and productivity of the workforce, as it has allowed the employer to select the best candidate for the job whereas this candidate would not have been available in the absence of VRS.

2.68 Quantifying this impact is, unfortunately, extremely difficult and it has not been possible to identify a feasible and robust approach. As we wish to be conservative in our estimates we do not wish to speculate on what the magnitude potential benefits might be and hence treat this as a non-quantified benefit of VRS in subsequent analysis.

Multiplier benefits

2.69 If a new business is established, there will be an increase in the employment rate because workers are required to produce the output of the company. This is the direct effect. This business requires inputs and hence there is a trickle-down effect on their suppliers and so on down the supply chain. This is the indirect effect. As a result of the direct and indirect effects, household incomes will increase and some of this increased income will be re-spent on final goods and services: this is the induced effect. An employment multiplier is the ratio of direct plus indirect (and possibly induced) employment changes to the direct employment change. These effects generate employment in a range of industries and it is important to allow for this employment effect in the context of VRS for the UK.

2.70 There is debate amongst economists about the magnitude and validity of multiplier effects that arise from an increase in government spending or the creation of jobs through the establishment of a new business. Indeed, on the magnitude of multiplier effects the Treasury Green Book states:

> "The effect on net employment and net output is likely to be much smaller than the direct employment and output effects of the project. Evidence should support the assessment of the scale and importance of any net employment and net output benefits, taking account

[22] http://inmylingo.blogspot.com/2010/04/exclusive-interview-with-sorensonvrs.html

> of multiplier effects. A multiplier measures the further economic activity, (whether output or jobs), resulting from the creation of additional local economic activity."

2.71 On validity of multiplier effects, some argue that the creation of jobs leads to additional jobs being created in the supply chain and as a result of increased incomes and expenditure by those with new jobs. Opponents suggest that other effects are at work and that the level of employment is determined by the level of inflation and money supply, or of aggregate demand.

2.72 These views can, to some extent, be reconciled with reference to the timeframe over which the effects operate. It is natural to assume that following a period of job-creation, there would be some knock-on multiplier effects in the short run and that there would be a subsequent adjustment such that the view of employment being determined by the money supply and inflation rate holds, at least to some extent, in the long-run.

2.73 In this paper, we present an analysis based on multiplier effects both because the effects appear to be justifiable in the short run from an economic perspective and because it is a standard technique used in assessments of policies of this sort. Indeed, the fact that VRS would help Deaf people (who are disadvantaged in the labour market) into employment can be seen as akin to a policy that is designed to help a depressed economic region. Multiplier effects are a standard part of analyses of depressed regions and, given that VRS providers will invest in a range of regions in the UK and would create employment opportunities for those disadvantaged in the labour market, we consider the inclusion of multiplier effects to be justified. The estimates should, however, be treated with a certain degree of caution and we calculate the overall net benefit of VRS both including and excluding multiplier benefits.

2.74 It is possible to calculate multiplier effects from Input-Output tables, published by the Office for National Statistics (ONS) and other national statistics authorities. These tables illustrate interdependencies between industries and capture how changes in demand in one industry affect other industries that depend on it. The most recent version of ONS analytical input-output tables was published in 1995 and hence the applicability of these estimates to today's economy is questionable.

2.75 The Treasury Green Book notes that "where it is considered appropriate to calculate multipliers, guidance is available from English Partnerships and the Regional Development Agencies".

2.76 English Partnerships have produced an estimate of typical regional multiplier effects that flow from investments in the UK and we have used this estimate in our analysis.[23] The rationale for this is that VRS providers would invest in numerous regions and hence there could be numerous regional multiplier effects. Assuming that there are average linkages

[23] English Partnerships (2004), "Additionality Guide", Page 24.

within the local supply chain and that there would be average income and induced effects in each of the regions that received VRS investment, the relevant multiplier is 1.7. This suggests that for each job created by VRS providers, an additional 0.7 jobs would be created as a result of multiplier effects.

2.77 To be conservative in our estimate of multiplier effects, we take as the base for analysis the net total of 1,172 full time equivalent jobs created as a direct result of the provision of VRS, rather than the gross figure of 1,302 full time equivalent jobs created. On this basis, approximately 820 additional full time jobs would be created as a result of indirect and induced effects. Deaf people would have access to these additional jobs, and based on an estimate that approximately 0.28 per cent of people of working age are severely or profoundly Deaf, the number of full time equivalent jobs that would be filled by Deaf individuals would be 2.[24]

Value of additional jobs to the economy

2.78 The Department for Business, Innovation and Skills (BIS) has estimated that the average value added by each UK employee was £68,782 in 2008.[25]

2.79 Based on this estimate, the value of full time equivalent jobs created as a direct result of the provision of VRS in the UK would be £551.2m, measured in present value terms over ten years. The value of jobs created as a result of multiplier effects would be more than £385.9m, also measured in present value terms over ten years.

Health benefits

2.80 A limited amount of research has been conducted to measure the health impact of Deafness in quantitative terms of health-related quality of life. One of the most relevant studies in the context of VRS is that of Fellinger et al (2007) who applied three different health-related quality of life (HRQoL) measures on a sample of 236 Deaf people who use sign language.[26] It was found that Deaf people have a greater risk of mental illness and mental distress, whilst they also provided lower self-ratings of their quality of life compared with the hearing population. Furthermore, the Deaf appeared to have higher levels of emotional distress but no difference was found in relation to social functioning.

2.81 The healthcare literature has paid much attention to designing numeric measures of quality of life and to valuing quality of life. In the UK, the Quality Adjusted Life Year (QALY) measure is now accepted as standard and each QALY is valued at £30,000. A similar concept known as the Activities of Daily Living Adjusted Year (ADLAY) has been developed in the field of social care, to which a value of £20,000 per ADLAY is attached.

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[24] The percentage of people of working age with severe or profound Deafness has been calculated by dividing the number of people aged 16-60 that are profoundly Deaf (108,000, RNID) by the total number of people of working age (approx. 38.3m in mid 2009, National Statistics).

[25] See http://www.innovation.gov.uk/value_added/default.asp?page=76

[26] Fellinger J. et al (2007), "Mental distress and quality of life in hard of hearing", Acta Psychiatr Scand;115:243-5

2.82 There have been some attempts to measure the impact of Deafness in terms of QALYs and associated measurement instruments. Indeed, one Australian paper compares the health status scores of four different instruments, each of which has a maximum score of 1 for perfect health.[27] The study found that "hearing loss is routinely associated with a loss of HRQoL of 0.24 QALYs per year". The primary interest of the paper is in acquired hearing loss, but the work of Fellinger et al. (2007) showed that WHO-Quality of Life scores were similar for those with acquired hearing loss and the signing Deaf. It would therefore be reasonable to assume that profound Deafness is associated with a loss of 0.24 QALYs per year.

2.83 Given a baseline of QALYs lost through profound Deafness, the next step is to assess the impact that VRS could have. This is a rather tricky exercise for which there is little published evidence. Whilst there is some evidence on the health benefits of hearing aids, we have been able to identify few studies that have quantified the health status impact of other assistive technologies. Hearing aids have been estimated to increase HRQoL by 0.12 using the Health Utilities Index (HUI) 3 measure and 0.07 on the HUI 2 measure.[28] The EQ-5D measure, on which QALY estimates are typically based, was unable to detect an impact of hearing aids. The study recommends that the HUI 3 measure should be used for evaluating HRQoL in a population with hearing complaints.

Götherström et al

2.84 Given that the EQ-5D measure is considered insufficiently flexible to identify the impact of assistive technologies for hearing, it is unfortunate that the only study that has undertaken a quantitative comparative study of text and video relay services used EQ-5D as the device to measure health improvements. Nonetheless, the study does have several points of interest in the context of our work.

2.85 Götherström et al. undertook a comparative study of text and video relay services for Swedish people that had been born Deaf.[29] All study participants had access to text relay services but only a subset had access to VRS, which was available from 8am to 8pm each day. The authors considered qualitative aspects of the service, estimated the socioeconomic cost of the services, the distribution of costs, the impact on quality of life and communicative effects.

2.86 It was found that users rated the quality of the VRS significantly higher than the text relay service and that the incremental cost of providing VRS was approximately SEK 40,000 per user, per annum (approximately £3,450 at current exchange rates).

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[27] Australian Communications Exchange (2009) submission to the Department of Broadband, Communications and the Digital Economy Feasibility Study into an Independent Disability Equipment Program

[28] Grutters et al. (2007), "Choosing between measures: comparison of EQ-5D, HUI2 and HUI3 in persons with hearing complaints", Qual Life Res. 16(8): 1439–1449.

[29] Götherström, U., Jan Persson, J. and Jonsson, D. (2004), "A comparative study of text telephone and videophone relay services", Technology and Disability, 16:2:101-109

2.87 Having access to VRS led to a significant improvement in the communicative abilities of Deaf individuals. Indeed, having access to VRS led to a 33 per cent increase in general communicative ability (from 0.61 to 0.81 on a zero-one scale), whilst the increase in communicative ability at work was approximately 62 per cent. The study could not identify health effects measured through the EQ-5D tool but this should not be taken as evidence that VRS has no health effects. As discussed above, there is some consensus that EQ-5D is too inflexible to pick up changes arising from assistive technologies.

2.88 However, it is interesting to note that the 0.01 change in EQ-5D score observed in the study is identical to the change observed in the study of different measures of the impact of hearing aids on HRQoL. That paper showed that a change in EQ-5D score of 0.01 corresponded to a change of 0.12 on their preferred HUI3 measure. If this holds also for other assistive technologies, VRS would lead to an increase in HRQoL of 0.12. This would be worth £3,600 per year if we apply NICE's recommended valuation of £30,000 per QALY.

2.89 Based on these assumptions, the total health benefit arising from VRS would reach £136.8m per annum once the technology has been fully rolled out to 38,000 potential users. The present value of these health benefits over ten years is approximately £898.5m.

Benefits to HM Treasury

2.90 In addition to the economic benefits identified above, there would also be benefits to the Treasury as a result of the provision of VRS in the UK and the jobs that it would create. These benefits would come from two sources: reduced welfare payments and increased tax revenues.

Reduced welfare payments

2.91 It was noted above that 1,302 full time equivalent jobs would be created as a direct result of introducing VRS in the UK and that a total of 2,504 individuals would secure either part time or full time employment with VRS providers.

2.92 Some of these individuals would take on a role with the VRS provider whilst continuing with their existing employment (this might be especially true for interpreters) whilst others might simply move from a non-VRS job to employment with VRS providers. Still others would move from unemployment to employment as a result of securing a job with VRS providers and it is these individuals that we are particularly concerned with in estimating the benefit to the taxpayer as a result of reduced spending on welfare payments.

2.93 It is rather difficult to estimate this benefit to the taxpayer as we do not know the number of people that would move from unemployment to employment with VRS providers. However, noting that the unemployment rate of severely and profoundly Deaf people is four times the national average, it is probably reasonable to assume that Deaf individuals that find a job with VRS providers would have been unemployed in the absence of the

service. It is also likely that some hearing people would enter employment as a result of the service.

2.94 To be conservative in our estimates, we have chosen to estimate the lower bound of saved welfare payments by focussing on Deaf individuals that would enter employment with VRS providers. This approach also enables us to estimate the welfare payments that unemployed individuals would receive in the absence of VRS though it should be noted that we do not attempt to provide a complete inventory of benefits that may be received by Deaf individuals. Rather, we include in the analysis only the primary welfare payments that are affected by employment status.

2.95 It should be noted, however, that there may be additional welfare payment savings if hearing individuals were to enter employment as a result of VRS.

Increased Deaf employment rate

2.96 Deaf people may be entitled to several different welfare payments in the UK. Some of these payments are available irrespective of employment status whilst others are available only if the individual is unable to work because of their Deafness. In-work payments are also available and the Deaf may use state-funded schemes designed to help them enter employment such as the Pathways to Work Scheme and the New Deal for Disabled People (available in certain areas only).

2.97 It is possible that the introduction of VRS could lead to a reduction in welfare payments to Deaf people. This would be the case if the Deaf unemployment rate were to fall as a result of VRS and this cost saving is greater than the in-work benefits to which employed individuals are entitled. The key employment-status dependent benefits to which Deaf individuals may be entitled are as follows:

(a) Employment and Support Allowance (ESA) — if the Deaf person is unable to work (or working <16 hours per week) because of their disability. Payments may be up to £96.85 per week, or £5,036.20 per year. The average ESA claimant receives approximately £4,800 per year.[30]

(b) Access to Work — provides help for the Deaf person to get necessary equipment and communication support for work. The scheme covers up to 100 per cent of costs, though larger employers must make a significant contribution. We assume that the average award is £500 for the purposes of this paper, based on the idea that the majority of Deaf individuals would require a text-phone at work, at a cost of approximately £250, and that a minority of individuals would require additional assistance at greater cost.

[30] Average payment calculated from figures available at http://news.bbc.co.uk/1/hi/uk/10431024.stm

(c) Working Tax Credit — this is for employed individuals on low incomes and, whilst there are complex rules, the average payment is approximately £1,600 per year.[31] Entitlement depends on income, marital status and whether or not the individual has dependent children.

(d) Job Grant — a one-off payment of £100 or £250 if the individual enters employment and stops claiming benefits.

(e) Return to Work Credit — a tax-free payment of £40 per week which can be paid for up to 52 weeks.

Employment of less than 16 hours per week

2.98 It is possible that some Deaf people would be able to enter employment as a result of VRS but would choose to work for less than 16 hours per week. This could lead to an increased welfare expenditure on these individuals in the first year because they would still be entitled to claim ESA, but would also become eligible for the Access to Work Scheme. Individuals receiving ESA are generally allowed to continue to claim the benefit for only 52 weeks whilst undertaking 'permitted work' of less than 16 hours per week for which a wage of no more than £93 may be received.

2.99 Based on the assumptions above, welfare expenditure could increase by £500 in the first year as the individual enters employment, continues to receive ESA and receives an Access to Work payment.

2.100 The impact in subsequent years would depend upon the individual's response. If they chose to stop work so as to remain eligible for the ESA then there would be no change in welfare spending. If they continued to work for less than 16 hours per week, or entered a high paid job, they would not be entitled to receive the Working Tax Credit and hence there would be a saving of £4,800 per year. If they chose to work sufficient hours in a low paid job to become eligible for the Working Tax Credit, the welfare payment saving would be £3,200 per year.

Employment of more than 16 hours per week

2.101 For the purposes of this analysis, we have assumed that where Deaf individuals enter employment, they do so for more than 16 hours per week. The impact of employment on welfare spending is then dependent on the salary that the individual earns in their employment and whether or not the individual has dependent children. The threshold income above which the Working Tax Credit will not be paid is significantly greater for

[31] Direct statistics on the average Working Tax Credit payment are not available. However, the average amount of Credit that is unclaimed by entitled individuals is £1,600 per year. Assuming that the characteristics of claimants and non-claimants are identical, it is reasonable to use this figure in our analysis. The source for this statistic is HMRC, available at http://www.taxationweb.co.uk/tax-articles/general/working-tax-credit-are-you-missing-out-on-extra-cash.html

those with dependent children and for the purposes of this work we assume that those with children would be entitled to receive the Working Tax Credit upon entering employment whilst those without children would not.

2.102 For those that would be eligible for the Working Tax Credit upon entering employment, we assume that they would be entitled to the average Working Tax Credit payment, Return to Work Credit and higher Job Grant payment. For those that would not be eligible for the Working Tax Credit we assume that they would be entitled to receive the lower Job Grant payment and return to work credit in the first year but would not be eligible for welfare payments thereafter.

2.103 Based on the cost assumptions outlined above, welfare payment savings for individuals entering employment in which they receive the Working Tax Credit would be £370 in the first year and £3,200 each subsequent year. For individuals that would not be entitled to the Working Tax Credit or the return to work credit, the saving would be £4,200 in the first year and £4,800 in subsequent years.

Total savings

2.104 We estimated above that a full time equivalent of 89 Deaf people would eventually enter employment with VRS providers and that a full time equivalent of 2 Deaf people would enter employment as a result of indirect and induced effects.

2.105 For the purposes of calculating the impact of employment on welfare payments, however, it is appropriate to focus on the absolute number of Deaf people that would secure jobs rather than full time equivalence. The impact on welfare spending of an individual working full time would not be equivalent to the impact of three individuals working for a third of a normal working week.

2.106 To implement this calculation, it is therefore necessary to make an assumption concerning the number of hours that would be worked by a typical Deaf employee of a VRS provider. In this work, we assume that each employee would typically work for 30 hours per week, and would earn the corresponding proportion of the median full time wage in the UK. This means that each employee is assumed to earn a salary of £20,342.[32] Based on this assumption, we can estimate that 111 Deaf individuals would enter employment with VRS providers and 3 individuals would enter employment as a result of multiplier effects.[33]

2.107 As noted above, the threshold income above which the Working Tax Credit will not be paid is significantly greater for those with dependent children and hence we assume that those with children would receive the credit upon entering employment. We further assume that 50 per cent of Deaf individuals who secure a new job have dependent

[32] The median UK wage is £25,428. The wage of a typical part time employee is calculated as: Wage = (30/37.5)*£25,428 = £20,342

[33] The figures are calculated as follows: Direct effect = (37.5/30)*89 = 111. Multiplier effect = (37.5/30)*2=3

children. On this basis, 50 per cent of new employees would be entitled to the Working Tax Credit, Return to Work Credit and Job Grant and 50 per cent would be entitled to the Job Grant alone. All employees would benefit from the Access to Work scheme.

2.108 Based on these assumptions, the annual welfare payment saving rises from £82,000 in the first year to £396,000 in the fifth year of operation for jobs created by VRS providers. Measured in present value terms over a ten-year period, the total saving is £3.0m. The present value saving for jobs created through multiplier effects is £77,000.

Savings from intensified competition for jobs

2.109 We identified above that VRS would lead to intensified competition for jobs between hearing and Deaf individuals. Where a Deaf individual successfully competes for a job that would otherwise have been filled by a hearing person, there are two opposing impacts on welfare payments:

(a) there are savings for Deaf individuals that move into employment; but

(b) welfare payments would be made to hearing individuals who would have been in employment in the absence of VRS.

2.110 It was noted above that quantifying the impact of VRS on increased employment of the Deaf as a result of intensified competition for jobs has not been possible and, as a result, we cannot estimate the impact on welfare payments.

Increased tax revenues

2.111 When an individual moves into employment, the Treasury benefits both from reduced welfare spending and from increased tax receipts.

2.112 We estimated above that a net figure of 1,172 full time equivalent jobs would be created as a direct result of the provision of VRS and that an additional 820 full time equivalent jobs would be created as a result of direct and induced effects. The impact of these jobs on tax revenue is somewhat difficult to calculate because it is heavily dependent on the earnings of each individual and cannot simply be estimated by multiplying average income by the total number of jobs created. The calculation is further complicated by the fact that some of the individuals who would find employment with VRS providers would already be paying taxation whilst those that would be employed for a small number of hours per week may be exempt from income tax.

2.113 As a result of these difficulties, and so as to be conservative in our calculations, we have chosen to estimate the lower bound of increased tax revenues by focussing on Deaf individuals who enter employment with VRS providers. As for the calculation of welfare payments, it is appropriate to focus on the total number of individuals who enter employment rather than full time equivalence. We again assume that each employee would typically work for 30 hours per week, would earn a salary of £20,342 and would have been unemployed in the absence of VRS and hence would not have paid any

income tax. We also continue to assume that 111 Deaf individuals would enter employment with VRS providers and 3 individuals would enter employment as a result of multiplier effects.

2.114 Applying an income of £20,342 to the Prudential Income Tax and National Insurance Calculator, the median individual would incur a tax and National Insurance bill of £4,382.

2.115 On this basis, the total increase in tax revenue as a result of employment with VRS providers would be £157,000 in the first year, rising to £423,000 once VRS has been fully rolled out. This has a present value of £3.3m over ten years. The present value of increased tax revenue for jobs created through multiplier effects is £86,000.

Summary

2.116 Table 2.4 below summarises the costs and benefits of providing VRS in the UK. Given some uncertainty concerning the cost of establishing VRS in the UK, a range of potential net benefits is given in the table. We present an estimate based on the unit cost approach discussed in paragraphs 2.9 to 2.17. We also present upper and lower bound estimates based on the bottom-up approach which was used as the primary costing methodology in this paper.

Table 2.4: Monetised Economic Costs and Benefits of VRS

	Present value over ten years	
	Excluding multiplier effects	*Including multiplier effects*
Costs – unit cost approach		
Total cost	**£785.7m**	**£785.7m**
Costs – bottom-up approach		
Contact centre setup	£6.3m	£6.3m
Head office setup	£2.0m	£2.0m
Recruitment	£10.2m	£10.2m
Training	£4.9m	£4.9m
Videophone provision	£60.6m	£60.6m
Contact centre ongoing (low)	£487.9m	£487.9m
Contact centre ongoing (high)	£575.6m	£575.6m
Head office ongoing (low)	£162.6m	£162.6m
Head office ongoing (high)	£191.9m	£191.9m
Total cost (low)	**£734.5m**	**£734.5m**
Total cost (high)	**£851.5m**	**£851.5m**
Benefits		
Productivity	£12.5m	£12.5m
Employment (direct)	£551.2m	£551.2m
Employment (multipliers)	-	£385.9m
Health benefits	£898.5m	£898.5m
Total benefits	**£1,462.3m**	**£1,848.1m**
Net benefit (unit cost)	**£676.6m**	**£1,062.5m**
Net benefit (bottom-up, low cost)	**£727.7m**	**£1,113.6m**
Net benefit (bottom-up, high cost)	**£610.8m**	**£996.6m**

Note: Figures presented in the table may not sum to totals exactly because of rounding.

2.117 In addition to the economic benefits presented above, there would also be benefits to the Treasury arising from reduced welfare spending and increased tax revenues. These benefits are presented in Table 2.5 below.

Table 2.5: Benefits of VRS to the Treasury

	Present value over ten years	
	Excluding multiplier effects	*Including multiplier effects*
Welfare payment savings (direct)	£3.0m	£3.0m
Welfare payment savings (multipliers)	-	£0.1m
Tax and National Insurance revenue (direct)	£3.3m	£3.3m
Tax and National Insurance revenue (multipliers)	-	£0.1m
Total benefits	**£6.4m**	**£6.5m**

2.118 On the basis of the tables presented above, it can be seen that VRS would have a significant net benefit taking into account only those benefits that it has been possible to quantify. As noted above, there are numerous other benefits of VRS which we have not been able to place a monetary value on, including:

(a) benefits to hearing colleagues, friends and relatives of Deaf individuals that would be able to communicate with the Deaf more easily and effectively;

(b) increased ability for Deaf entrepreneurs to establish and run companies;

(c) ability for the Deaf to convey emotions and to be expressive in telecoms;

(d) ability for Deaf individuals to communicate directly with other Deaf people using videophones — approximately eight such calls are made for each VRS call in the US;

(e) improved self-confidence and increased independence for BSL users; and

(f) reduced public sector spending on sign language interpreters.

2.119 Accounting for these benefits would further reinforce the conclusion that VRS would deliver a substantial net benefit to the UK economy.