

**Human Factors (HF);
Access symbols for use with video content and ICT devices;
Development and evaluation**



Reference

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650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
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Foreword

This Technical Report (TR) has been produced by ETSI Technical Committee Human Factors (HF).

A Test sounds.zip file containing .mp3 files of the earcons used in the testing is contained in archive tr_102520v010102p0.zip which accompanies the present document.

Introduction

Royal National Institute of the Blind (RNIB) in UK was having difficulty promoting the audio description service on digital television. The difficulty seemed to be due to a circular problem: few people knew of the service so few people were using it; since so few people were using it, no manufacturers wanted to develop products for it; since no products were available for it, very few people knew about it.

Meanwhile, Royal National Institute for Deaf People (RNID) in UK was reporting similar difficulties with subtitles, even though they had been available for 30 years. Similarly, the difficulty was that people were failing to recognize where such services were available and to know how to access them.

This same problem applied to a range of access services.

An ETSI Standard (ES) has therefore been developed that specifies a family of five symbols that denote the availability of access services for use with video content and ICT devices that can promote the provision of access services by increasing their take-up as a result of improved recognition of those features being available.

The work is intended to assist stakeholders who wish to provide access services to promote such services in a harmonized way and to assist purchasers with a simple way to identify those products and services that provide access services.

The present document describes the background research, symbols development and evaluation undertaken to create the ETSI Standard.

1 Scope

The present document reports the background research, symbols development and evaluation undertaken to create a European Standard (ETSI ES 202 432) [4] on symbols to identify the availability of access services applicable to a range of ICT devices.

The access services to be identified were:

- Subtitling.
- Audio description.
- Signing.
- Speech output.
- Spoken command.

The symbols defined in the final standard will be applicable to all access services, ICT devices and associated media that provide the defined facilities.

2 References

For the purposes of this Technical Report (TR), the following references apply:

NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

- [1] ETSI EG 201 379: "Human factors (HF); Framework for the development, evaluation and selection of graphical symbols".
- [2] ETSI EN 301 462: "Human Factors (HF); Symbols to identify telecommunications facilities for the deaf and hard of hearing people".
- [3] ETSI ES 202 076: "Human Factors (HF); User Interfaces; Generic spoken command vocabulary for ICT devices and services".
- [4] ETSI ES 202 432: "Human Factors (HF); Access symbols for use with video content and ICT devices".
- [5] ETSI ETR 070: "Human Factors (HF); The Multiple Index Approach (MIA) for the evaluation of pictograms".
- [6] ETSI ETS 300 375: "Human Factors (HF); Pictograms for point-to-point videotelephony".
- [7] ETSI TR 101 041-1: "Human Factors (HF); European harmonization of network generated tones; Part 1: A review and recommendations".
- [8] IEC 417: "Graphical symbols for use on equipment. Index, survey and compilation of the single sheets".
- [9] IEC 60416 (1988): "General principles for the formulation of graphical symbols".
- [10] IEC 60417-1 (1988): "Graphical symbols for use on equipment: Part 1: Overview and application".
- [11] IEC 80416-1 (2001): "Basic principles for graphical symbols for use on equipment - Part 1: Creation of symbol originals".
- [12] ISO 7000 (1989): "Graphical symbols for use on equipment - Index and synopsis".
- [13] ISO 7001 (1990): "Public information symbols".

- [14] ISO 80416-4 (2005): "Basic principles for graphical symbols for use on equipment - Part 4: Guidelines for the adaptation of graphical symbols for use on screens and displays (icons)".
- [15] ISO 9186 (2001): "Graphical symbols - Test methods for judged comprehensibility and for comprehension".
- [16] ISO/IEC 11581-5 (2004): "Information technology - User system interfaces and symbols - Icon symbols and functions - Part 5: Tool icons".
- [17] ISO/IEC 13251 (2004): "Collection of graphical symbols for office equipment".
- [18] ISO/IEC Guide 71 (2001): "Guidelines for standards developers to address the needs of older persons and persons with disabilities". (Equivalent to CEN/CENELEC Guide 6).
- [19] ISO/IEC Guide 74 (2004): "Graphical symbols - Technical guidelines for the consideration of consumers' needs".
- [20] ITU-T Recommendation E.121: "Pictograms, symbols and icons to assist users of the telephone and telefax services".
- [21] ITU-T Recommendation F.910: "Procedures for designing, evaluating and selecting symbols, pictograms and icons".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

audio description: an additional audible narrative, interleaved with the dialogue, which describes the significant aspects of the visual content of audio-visual media

MySQL: multithreaded, [multi-user](#), [SQL](#) Database Management System

PHP language: a widely-used general-purpose scripting language that is especially suited for Web development

signing: the use of sign language to convey the significant aspects of the audible content audio-visual media

sign language: a language that uses a system of manual, facial, and other body movements as the means of communication

NOTE: There is no widely accepted international sign language. Many national versions exist together with local "dialects".

speech output: the ability of a device to communicate to its user using spoken language

spoken command: the ability of a device to accept and respond to spoken instructions from a user

subtitling: a transcript of the spoken dialogue of audio-visual media, superimposed as text onto the visual element

symbol: a graphic device used to convey information

NOTE: Symbols, pictograms and icons are all graphic devices used to convey information, either as complementary to or as a replacement for text. The word "symbol" is sometimes used specifically to refer to abstract representations, the word "pictogram" to refer specifically to pictorial representations, and the word "icon" to display screen based graphical devices. In practice these distinctions are often unclear and so the term symbol is used here generically.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

DVD	Digital Versatile Disc
ICT	Information and Communication Technology
MIA	Multiple Index Approach
PHP	PHP: Hypertext Preprocessor
SQL	Structured Query Language

4 Preparatory work

4.1 Visual symbols

4.1.1 General

The symbols to be developed were intended to identify the availability of access services applicable to a range of ICT devices. The access services to be identified were:

- Subtitling;
- Audio description;
- Signing;
- Speech output;
- Spoken command.

In the original documentation, speech output and spoken command were referred to as voice output and vocal command but their titles were changed so as to be consistent with ES 202 076 [3], the ETSI standard on generic spoken commands.

Early in the project it was decided that the symbols should be developed generally in accordance with the guidance set out in EG 201 379 [1] and any new symbols were to be created in accordance with ISO/IEC Guide 74 [19] and with IEC 80416-1 [11] (which superseded IEC 60416 [9]). Note was taken both of ISO/IEC Guide 71 [18] so as to address the needs of older and disabled people and of the advice in ITU-T Recommendation F.910 [21].

4.1.2 Testing methods

The normally preferred ETSI test for symbols is ETR 070 [5] which describes seven multiple indices to evaluate a pictogram. They are:

1	The hit rate
2	The false alarm rate
3	Missing values
4	Subjective certainty
5	Subjective suitability
6	Pictogram preference
7	Pictogram set preference.

In the international field, ISO 9186 [15] describes test methods for symbols. The methods of carrying out the tests are different from those of ETR 070 [5] as are the scoring and evaluation schemes. As it was required to provide symbols that would be acceptable for adoption and registration by the international standards community, it was decided that testing should be carried out in accordance with ISO 9186 [15] but it was considered that the testing could be used to generate information that would meet the Multiple Index Approach (MIA) set out in ETR 070 [5].

At the time when the work was carried out, ISO 9186 [15] was under revision. The version that was used was the published version that provides test methods for judged comprehensibility and for comprehension. The test of comprehensibility asks a respondent to estimate the percentage of the population likely to be able to understand the meaning of a symbol. When there are three or fewer variants of a symbol under test, or where the results of the comprehensibility test are inconclusive the comprehension test is to be performed by asking a different set of respondents to write their own description of the meaning of each candidate symbol.

In order to provide information that was able to satisfy most of the requirements of ETR 070 [5] and also to guard against the possibility of an indeterminate result from the judged comprehensibility test, it was decided to perform both tests of ISO 9186 [15] in parallel.

In the ISO 9186 [15] comprehensibility judgement test it was decided to ask the subject to give a score out of 10 for each symbol as such a score was considered to be easier to comprehend than percentage.

The score for comprehensibility judgement could be considered to indicate a parameter similar to the Subjective suitability (5) for ETR 070 [5].

The highest score achieved in this test provides an answer similar to the Pictogram preference (6) for ETR 070 [5].

In the ISO 9186 [15] comprehension test the subject is asked to describe the meaning of the symbol.

Judges subsequently assigned a category to each answer as follows;

- 1 = Correct understanding of the symbol is certain
- 2 = Correct understanding of the symbol is very probable
- 3 = Correct understanding of the symbol is probable
- 4 = The meaning which is understood is opposite of intention
- 5 = Any other response
- 6 = The response given is "Don't know"
- 7 = No response is given

A score is then derived for each answer.

Answers classified as 1, 2 & 3 can be used to estimate the Hit rate (1) for ETR 070 [5].

Answers classified as 4 & 5 can be considered to be equivalent to the False alarm rate (2) for ETR 070 [5].

Answers classified as 6 & 7 can be considered to be equivalent to the Missing values (3) for ETR 070 [5].

Answers classified as 1, 2 & 3 can be used to give a score indicating the Subjective certainty (4) for ETR 070 [5].

An answer to the Pictogram set preference (7) for ETR 070 [5] cannot be derived from the ISO 9186 [15] tests. This was not considered to be significant as the test did not incorporate a number of pictogram sets.

In view of the short time scales available it was considered that the testing might best be conducted by means of a questionnaire on an Internet Website so as to achieve as large a spread of test subjects as possible. It was realized that this might result in some loss of control of the subject selection but the benefits of reduced cost per test were considered to be important and the on-line tests could possibly be supported by some paper testing. It was recognized that it would be necessary to control tests offered to the subjects so that none took part in both the comprehension and comprehensibility tests. Testing would have to be offered in a number of languages.

The testing actually carried out is described in clause 6.

4.1.3 Symbol research

Work started with research to find any available symbols that were intended for use in similar fields. Amongst the documents surveyed were EN 301 462 [2], ETS 300 375 [6], ISO 7000 [12], ISO 7001 [13], ISO/IEC 11581-5 [16], ISO/IEC 13251 [17], IEC 60417-1 [10] (which superseded IEC 417 [8]) and ITU-T Recommendation E.121 [20].

In this study, only one possibly relevant symbol was found, in IEC 60417-1 [10]. It was symbol 5520, representing subtitle (in teletext mode) but a number of visual metaphors that could be used were found in the various references and on the Internet. The results of this initial survey are shown in figure 1.












Source:	Subtitling:	Signing:	Audio description:	Voice Command:	Voice output:
UK Theatre programmes/Anna Grady					
Sky		Available, but what symbol?			
CWA 14835 (2003)					
ETSI EN 301 462 (2000)					
National Disability Arts Forum (US) and Graphic Artists Guild (US)	CC		AD		
Graphic Artists Guild (US) (Open Captioning)	OC				
National disability arts forum (US)					
US National Captioning Institute (Captioning)					
Kerasotes Theatres (US) (Open Captioning)					
Ofcom Code on Electronic Program Guides	S	SL	AD		
IEC 60417-1 (Symbol 5520)					

Figure 1: Initial survey results

In an attempt to create a larger number of candidate symbols for testing, a brainstorming session was held in order to generate as many symbols as possible. Figure 2 shows some of the results of this work.

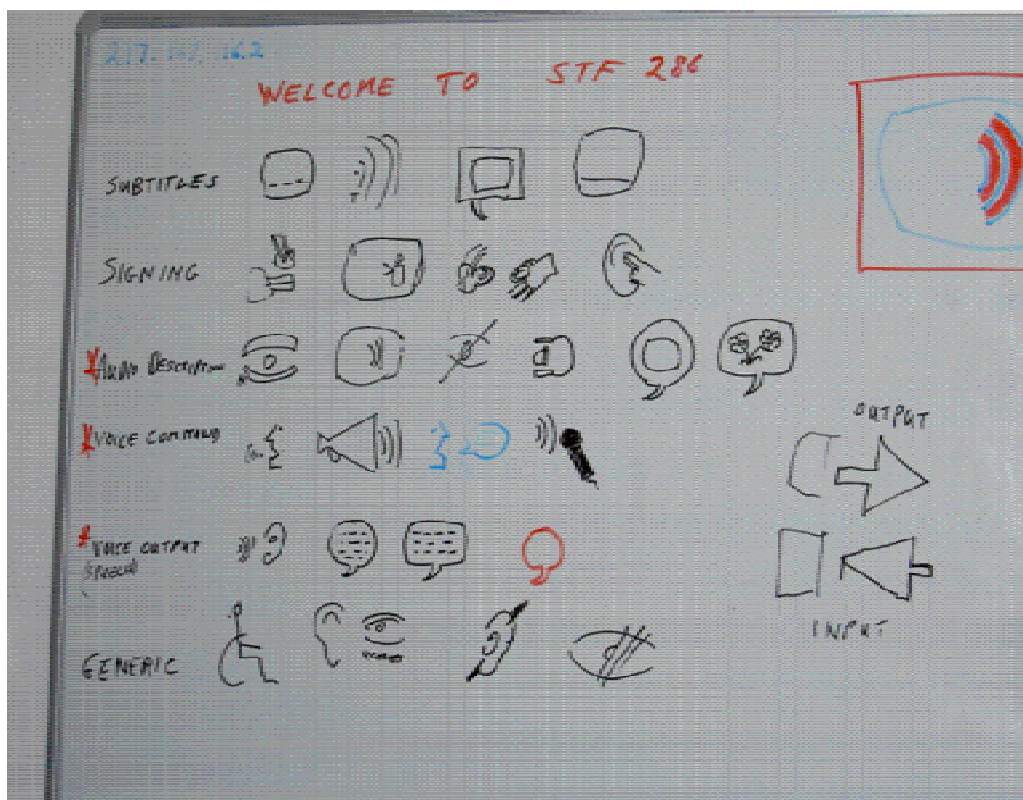


Figure 2: Results of brainstorming session

Following this session it was considered that the project would benefit from some additional candidate symbols designed by a professional graphic designer. Invitations to tender were therefore put out to ETSI members asking them to provide suitable candidates and subsequently a graphic designer was engaged who provided a large number of additional new symbols.

5 Selection of visual symbols for test














The very large number of candidate symbols, which were all collected in accordance with the requirements of ISO 9186 [15], now needed to be reduced to the lower number needed for the testing. It was decided that instead of making this selection by the members of the STF, all of the potential candidate symbols would be put to the members of the ETSI HF committee, asking that each be scored out of ten as to its subjective suitability for each particular purpose. This questionnaire was carried on a specially created website.














The total set of symbols to be tested was excised from all early published drafts of the present document so as to avoid prejudicing the later test results.

Clause A.1 gives an example of one of the web pages of the questionnaire put to the ETSI HF Committee on the specially constructed website that all members were invited to visit.

5.1 Subtitling

For the "subtitling" symbols, the results of the HF Committee test of suitability were as shown in order of preference in figure 3.

Identifier	Score	Image
st30	92	
st33	77	
st36	70	
st37	68	
st35	63	
st05	49	
st32	39	
st34	39	
st24	35	
st25	33	
st13	28	
st15	25	
st28	24	

Identifier	Score	Image
st06	23	
st14	23	
st18	23	
st19	22	
st16	21	
st21	21	
st27	21	
st03	20	
st01	19	
st26	18	
st22	18	
st20	17	
st31	15	












Identifier	Score	Image
st11	15	
st04	15	
st02	15	
st09	15	
st23	14	
st17	13	
st10	11	
st29	9	
st07	8	
st12	6	
st08	2	

Figure 3: Subtitling symbol candidates















The results of this questionnaire were analysed in order to choose the symbols that would be used for the final comprehensibility judgement and comprehension tests to ISO 9186 [15].














Following the guidance set out in ISO 9186 [15], st33 was eliminated as being too similar to st30, st32 was also eliminated as being similar to st37 and st34 was eliminated as being similar to st36.

This left **st30**, **st36**, **st37**, **st35**, **st05** and **st24** as being the six icons to be used for the main tests. It was agreed that St30 would need redrawing to agree with the source representation of IEC 60417-1 [10] - 5520.

5.2 Audio Description

For the "Audio description" symbols, the results of the HF Committee test of suitability were as shown in order of preference in figure 4.

Identifier	Score	Image
ad25	54	
ad27	46	
ad42	46	
ad02	42	
ad01	41	
ad30	38	
ad41	37	
ad32	36	
ad26	35	
ad16	32	
ad31	31	
ad28	31	
ad11	29	
ad06	29	

Identifier	Score	Image
ad40	28	
ad12	27	
ad15	26	
ad08	25	
ad10	25	
ad36	25	
ad04	24	
ad35	23	
ad03	20	
ad14	19	
ad05	19	
ad07	19	
ad09	19	















Identifier	Score	Image
ad19	18	
ad33	17	
ad37	16	
ad18	16	
ad13	16	
ad29	12	
ad34	8	
ad17	8	
ad22	7	
ad20	6	
ad23	4	
ad21	3	
ad38	2	
ad39	1	

Figure 4: Audio description symbol candidates










The results of this questionnaire were analysed in order to choose the symbols that would be used for the final comprehensibility judgement and comprehension tests to ISO 9186 [15].










Following the guidance set out in ISO 9186 [15], ad30 was eliminated as being too similar to ad27. ad01 was chosen in preference to ad02 on the grounds that the scores were substantially similar but that ad01 had a better graphical syntax as reading listen → document from left to right and that the standard tab on the document element was not masked by the headset element.

This left **ad25**, **ad27**, **ad42**, **ad01**, **ad41** and **ad32** as being the six icons to be used for the main tests.

5.3 Signing

For the "signing" symbols, the results of the HF Committee test of suitability were as shown in order of preference in figure 5.

Identifier	Score	Image
s126	82	
s105	59	
s102	56	
s123	56	
s116	54	
s124	54	
s104	53	
s101	51	
s103	50	

Identifier	Score	Image
s108	49	
s127	48	
s114	48	
s117	42	
s107	41	
s113	38	
s122	35	
s112	21	
s110	19	








Identifier	Score	Image
s118	18	
s120	17	
s115	15	
s109	15	
s119	14	
s121	3	
s125	1	

Figure 5: Signing symbol candidates

The results of this questionnaire were analysed in order to choose the symbols that would be used for the final comprehensibility judgement and comprehension tests to ISO 9186 [15].

Following the guidance set out in ISO 9186 [15], s102 was eliminated as being too similar to s105 as were s104, s101 and s103.

This left **s126**, **s105**, **s123**, **s116**, **s124** and **s08** as being the six icons to be used for the main tests.

5.4 Speech Output

For the "Speech output" symbols, the results of the HF Committee test of suitability were as shown in order of preference in figure 6.

Identifier	Score	Image
so30	55	
so26	51	
so19	46	
so27	41	
so24	34	
so04	33	
so28	32	
so03	30	
so22	30	
so29	29	

Identifier	Score	Image
so06	27	
so20	26	
so05	26	
so25	25	
so21	20	
so14	20	
so12	20	
so17	19	
so11	17	
so23	17	

Identifier	Score	Image
so18	17	
so15	13	
so10	13	
so08	10	
so09	10	
so13	9	
so07	8	
so01	8	
so02	5	
so16	4	










Figure 6: Speech output symbol candidates










The results of this questionnaire were analysed in order to choose the symbols that would be used for the final comprehensibility judgement and comprehension tests to ISO 9186 [15].

The symbols **so30**, **so26**, **so19**, **so27**, **so24** and **so04** were the six icons to be used for the main tests. It was decided that so24 needed some clarification of the "output" element, as it did not show well when it was reduced in size.

5.5 Spoken Command

For the "Spoken command" symbols, the results of the HF Committee test of suitability were as shown in order of preference in figure 7.

Identifier	Score	Image
sc26	80	
sc25	72	
sc22	50	
sc21	30	
sc04	28	
sc24	27	
sc01	24	
sc03	23	
sc05	21	

Identifier	Score	Image
sc02	18	
sc06	17	
sc08	17	
sc23	15	
sc17	14	
sc18	13	
sc20	12	
sc19	11	
sc12	11	









Identifier	Score	Image
sc07	9	
sc11	8	
sc10	6	
sc13	4	
sc09	4	
sc14	2	
sc15	2	
sc16	2	

Figure 7: Spoken Command symbol candidates

The results of this part of the questionnaire were analysed in order to choose the symbols that would be used for the final comprehensibility judgement and comprehension tests to ISO 9186 [15].

The symbols **sc26**, **sc25**, **sc22**, **sc21**, **sc04** and **sc24** were the six icons to be used for the main tests.

6 Test construction

6.1 Comprehensibility judgement

After some discussion it was decided that the main question for the comprehensibility test should avoid reference to percentages as it was considered that this could give difficulties to some subjects. The following instruction was used:

"Each symbol is supposed to mean [intended meaning]. How many people out of ten would you expect to understand this meaning?"

The order in which the referents were presented was randomized, so that if respondents failed to complete the test, their answers could still be used in the analysis of the results without creating an unbalance in favour of early presented symbols.

The order of the candidate symbols on each page was also randomized so as not to give any bias to the results.

6.2 Comprehension test

The basic question to be asked was "What do you think this symbol means?"

Each test page contained only one variant of a given referent together with a box for the subject's answer. The order in which the symbols were presented was randomized.

7 Presentation of website

7.1 General

The website was presented as closely as possible to the requirements of ISO 9186 [15]. To ensure a proper spread of subjects the following questions was asked of each test subject:

What is your full name?

What is your email address?

What country do you normally live in? (Select from list)

Are you male or female? (Male/Female)

How old are you? (Under 16, 16 - 30, 31 - 50 and over 50).

At what age did you finish full time education? (Under 17, 18 - 20, over 20). (This was considered to give a simple measure of educational attainment that was unaffected by national differences).

What is your occupation?

What is your native country? (Select from list)

Do you have difficulties with any of the following? Seeing, Hearing, Mobility, Dexterity, Learning, Speaking.

An originally intended question asking 'How would you describe your cultural background?' had to be dropped when it was found that the modern British concept of multiculturalism could not be readily translated into other European languages.

To encourage respondents, the front page of the web site contained the following statement:

'If you tell us your e-mail address, you could win a €50 voucher to spend on Amazon'.

The prize was contributed by the STF members.

Subjects accessing the website were presented with either the comprehensibility test or the comprehension test, the tests being allocated alternately to each subject as they logged on.

7.2 Comprehensibility Judgement Test

For the comprehensibility judgement test, the first page contained the following information.

The next page is an example of a completed questionnaire as we would like you to answer it.

We would like you to estimate how many people out of a maximum of 10 that you would expect to understand the meaning of each symbol.

Please note that 10 means that everyone would understand its meaning, with no one failing, and that 0 means nobody at all would understand it.

Please do not discuss this with other people when you are completing the test.

Thank you.

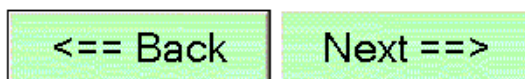
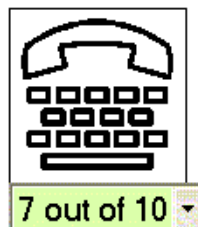
Symbols Survey

Example of a completed questionnaire

Example only. Do not answer!

Each symbol is intended to mean **Text Phone**.

How many people out of 10 would you expect to understand this meaning?



Page 5 of 16 pages.

[More information](#) about the project.

If you have any difficulty using this website, please [email webmaster](#).


Figure 8: Example page of the Comprehensibility Judgement test

7.3 Comprehension Test

For the comprehension test, a completed page was presented as a sample to guide the respondents and is shown in figure 9.

Other pages had a similar appearance but with pictures of the symbols under test.

You may see this symbol in association with a telephone.



What do you think this symbol means?

If you cannot guess the meaning, please answer "Don't know".

Do not worry if you give the same answer to more than one symbol.

Figure 9: A comprehension test sample

7.4 Translation

The questionnaires on the website were translated into French, German, Greek, Italian, Spanish and Russian. All except the Russian translations were made by native speakers of the languages rather than by interpreters. Respondents to the site were able to select their preferred language on the first page of the website.

Translation of the comprehension test responses was achieved by on-line automatic translation tools, supported by reference to dictionaries and in the final resort, by reference to native speakers of the language.

8 Website construction

8.1 General

The website was hosted by a provider who offered a competitive service providing scripting and a database. The scripting language used was PHP, with a MySQL database. The database was used for collecting information that the visitors entered, as well as some of the operation of the website, such as providing the ability to manage and display the translations. No validation was enforced on the data that visitors entered, so if they wished to leave any questions unanswered, they were still able to continue to progress through the survey.

The use of an online database provided an exceptionally powerful and flexible tool to analyse the data collected, as scripts could quickly be written to perform a number of tasks such as calculating statistics and creating graphical representations of the statistics. A powerful "judges' panel" facility was developed which provided the project team with the ability to allocate scores to all the answers given, whilst retaining the anonymity of the respondents and avoiding having to score the same answer more than once for each referent.

Judging was conducted as the testing progressed and it was possible to monitor the statistics as the surveys were being completed. The results could be displayed on a sort of bar chart to facilitate the analysis as the tests progressed. An example of the display is shown in figure 10.

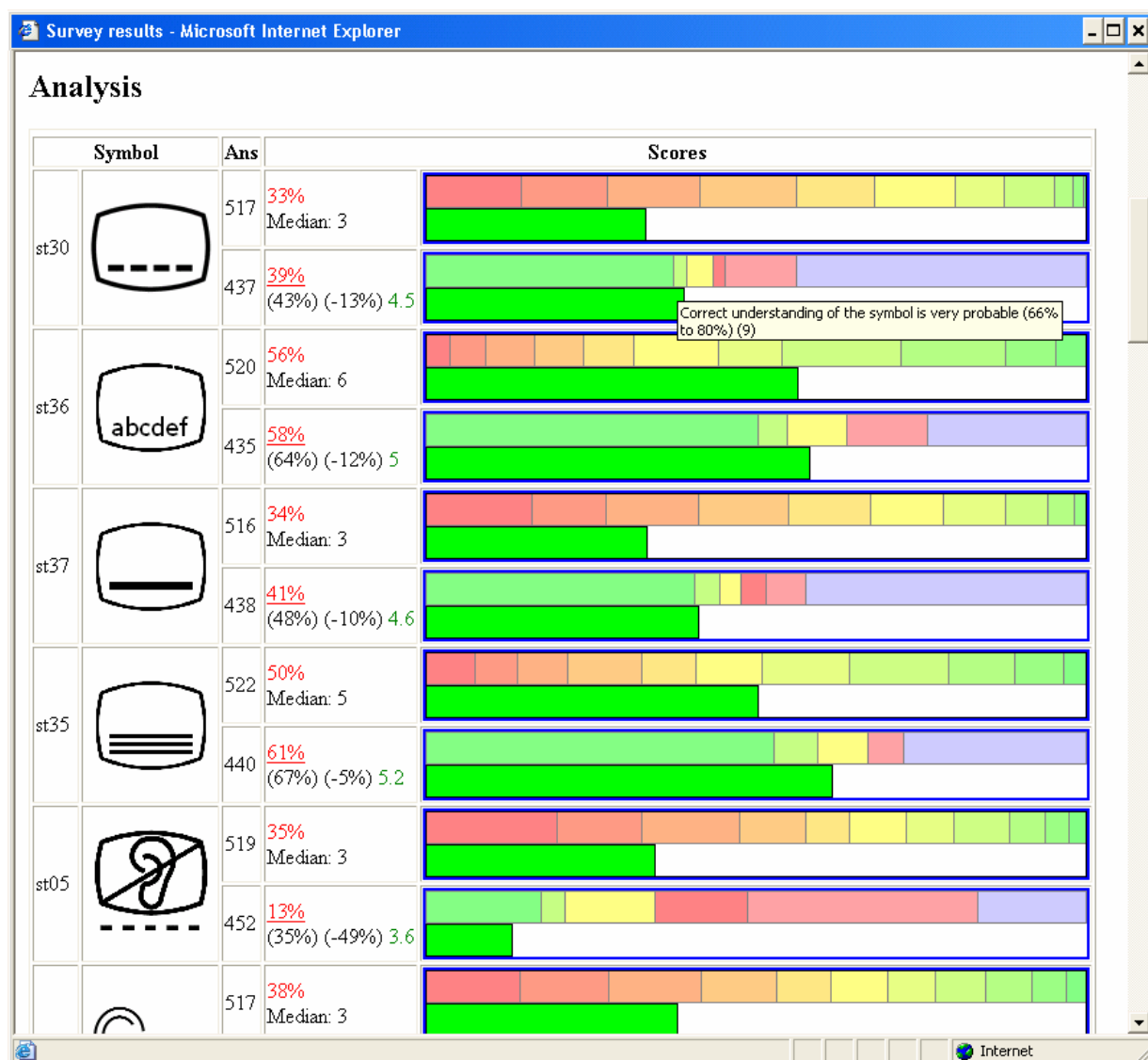


Figure 10: Example of the analysis web page

As described in clause 4.1.2, tests for judged comprehensibility and for comprehension were carried out in parallel, the respondents to the website being offered one or the other test alternately. The display illustrated in figure 10 offered a considerable amount of information.

For each symbol, the upper set of results was for comprehensibility judgement and the lower set for comprehension.

The comprehensibility judgement results displayed the number of respondents, the average and the median of the scores out of ten given in the answers. The upper coloured bar displayed the numbers of each score (details being displayed if the colour was hovered over with the mouse pointer) and the lower bar represented the median of the scores.

The comprehension test results displayed the number of respondents, the score according to ISO 9186 [15], the hit rate (x %) as a percentage, the false alarm rate (-y %) as a percentage and a score representing the subjective certainty.

8.2 Changes during testing

During the test it became apparent that symbol ad01 (see figure 4), which was intended to mean "Audio Description" was sometimes being interpreted as "Speech Output". The audio descriptions symbol was therefore modified by removing the "document" element, creating a new symbol, ad43. A modification was also made to the Speech output symbol, taking it out of the TV screen and changing the headphones into a speaker, to create a new symbol so31. This replaced the worst performing symbol being tested, so27. For signing, the most popular symbol was sl27, but as this was not pictured in a TV, it did not sit comfortably with the other symbols. It was therefore placed in a "TV" element to create a new symbol, sl28, which replaced the worst scoring sl23.

These changes are illustrated in figure 11.

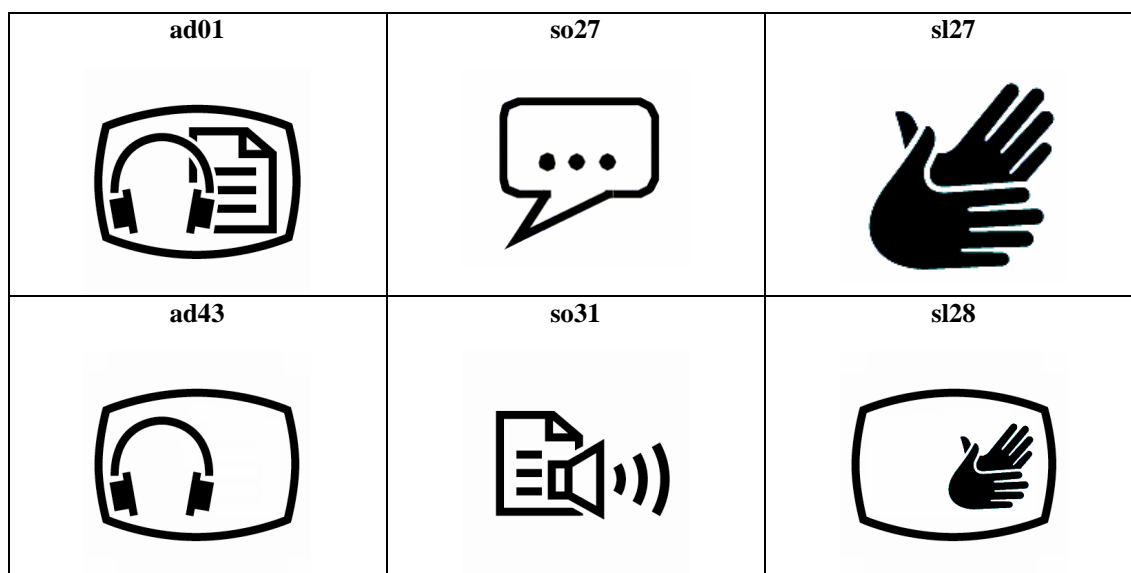


Figure 11: Changes during testing

9 Test results

There were 1 436 responses to the survey on the website of which 912 completed the survey. Responses came for 33 countries around the world with the majority (820) from Europe.

To check the cultural spread of the answers the European responses were grouped into regions.

For the purposes of analysis of any cultural effects, the European responses were grouped as coming from Central Europe (Austria, Belgium, Germany, Luxembourg, Netherlands and Switzerland), Eastern Europe (Bulgaria, Estonia, Poland), Iberia (Spain and Portugal), the Mediterranean (Cyprus, France, Greece, Italy), Scandinavia (Denmark, Finland, Norway and Sweden) and UK and Ireland.

Table 1: Responses from European regions

Region	Number of respondents
UK and Ireland	184
Scandinavia	324
Iberia	146
Central Europe	111
Mediterranean	50
East Europe	5
Total	820

The responses collected from the website, after judgement and scoring according to ETR 070 [5] and ISO 9186 [15], produced the scores set out in the following tables.

Table 2: Results for subtitles

Symbol	Comprehension Test					Comprehensibility Test	
	ETR 70 hit rate	ETR 70 false alarm rate	ETR 70 Missing values	ETR 70 score	ISO 9186 score	Average	Median
st05	35 %	49 %	17 %	3,6	13 %	35 %	3
st24	44 %	34 %	23 %	3,7	23 %	38 %	3
st30	43 %	13 %	44 %	4,5	39 %	33 %	3
st35	67 %	5 %	28 %	5,2	61 %	50 %	5
st36	64 %	12 %	24 %	5,0	58 %	56 %	6
st37	48 %	10 %	42 %	4,6	41 %	34 %	3

From these results symbol **st35** was chosen as the best symbol to represent the availability of subtitles. Symbol st36 did score slightly higher on the comprehensibility judgement test of ISO 9186 [15], but st35 performed better in the comprehension tests and gave a lower false alarm rate. There was some doubt also concerning the use of the Latin alphabet in st35 which had produced a few responses of "English subtitles" from Greek respondents.

To aid the reproduction of the symbol as a small icon, the number of lines was reduced from three to two. This change was supported by some comprehension test results which referred to the three lines as "three lines of subtitles" and to one line as "insert CD here".

Table 3: Results for audio description

Symbol	Comprehension Test					Comprehensibility Test	
	ETR 70 hit rate	ETR 70 false alarm rate	ETR 70 Missing values	ETR 70 score	ISO 9186 score	Average	Median
ad01	15 %	46 %	38 %	3,3	12 %	53 %	5
ad25	6 %	47 %	47 %	3,1	4 %	31 %	3
ad27	4 %	44 %	53 %	3,1	3 %	35 %	3
ad32	5 %	41 %	55 %	3,2	4 %	26 %	2
ad41	17 %	30 %	53 %	3,6	14 %	29 %	2
ad42	14 %	33 %	53 %	3,5	11 %	27 %	2
ad43	15 %	65 %	20 %	3,1	10 %	44 %	4

From these results symbol **ad01** was chosen as the best symbol to represent the availability of audio description. Symbol ad41 did give a higher hit rate according to ETR 070 [5] and also a lower false alarm rate but it did have a significantly higher missing value score and a much lower median score for comprehensibility.

The modified symbol ad43 was not a success.

Table 4: Results for signing

Symbol	Comprehension Test					Comprehensibility Test	
	ETR 70 hit rate	ETR 70 false alarm rate	ETR 70 Missing values	ETR 70 score	ISO 9186 score	Average	Median
sl05	66 %	8 %	26 %	5,2	63 %	57 %	6
sl08	60 %	11 %	29 %	5	57 %	47 %	5
sl16	80 %	3 %	16 %	5,7	77 %	52 %	5
sl23	40 %	13 %	46 %	4,5	38 %	27 %	2
sl24	79 %	2 %	18 %	5,7	77 %	58 %	6
sl26	71 %	9 %	20 %	5,3	67 %	62 %	7
sl28	68 %	17 %	15 %	5,2	66 %	44 %	4

From these results symbol **sl24** was chosen as the best symbol to represent the availability of signing. Symbol sl26 did give a slightly higher median value for comprehensibility but did not perform as well in the comprehension tests. Symbol sl16 also scored well. It had the same content as sl24 but without the screen surround and so was not preferred.

Table 5: Results for speech output

Symbol	Comprehension Test					Comprehensibility Test	
	ETR 70 hit rate	ETR 70 false alarm rate	ETR 70 Missing values	ETR 70 score	ISO 9186 score	Average	Median
so04	10 %	34 %	55 %	3,3	6 %	22 %	2
so19	27 %	21 %	52 %	3,9	22 %	41 %	4
so24	36 %	19 %	45 %	4,1	28 %	42 %	4
so26	20 %	33 %	48 %	3,6	13 %	35 %	3
so27	6 %	31 %	63 %	3,2	2 %	27 %	2
so30	19 %	45 %	36 %	3,4	13 %	37 %	3
so31	68 %	15 %	18 %	4,9	56 %	58 %	6

From these results symbol **so31** was chosen as the best symbol to represent the availability of speech output. It produced the highest hit rate, the lowest false alarm rate and the lowest missing value score. None of the other symbols approached its score either for comprehensibility or for comprehension.

Table 6: Results for spoken command

Symbol	Comprehension Test					Comprehensibility Test	
	ETR 70 hit rate	ETR 70 false alarm rate	ETR 70 Missing values	ETR 70 score	ISO 9186 score	Average	Median
sc04	6 %	31 %	63 %	3,2	1 %	19 %	2
sc21	22 %	18 %	61 %	3,8	17 %	33 %	3
sc22	6 %	63 %	31 %	2,9	2 %	43 %	4
sc24	2 %	65 %	33 %	2,8	-1 %	27 %	2
sc25	23 %	42 %	36 %	3,4	11 %	59 %	6
sc26	26 %	43 %	31 %	3,5	13 %	63 %	7

From these results symbol **sc26** was chosen as the best symbol to represent that spoken commands were acceptable. It produced the highest median score for comprehensibility and the highest hit rate and lowest missing value score. Symbol sc25 scored nearly as well but its appearance did not fit well with the family of symbols. Symbol sc21 scored better for comprehension but had a very low comprehensibility score.

Symbol sc26 is the IEC symbol 5210 for "Speak" from IEC 60417-1 [10]. It was included in the test following the guidance of ISO 9186 [15] which calls for existing graphical symbols already in international use to be so included.

It is presented in ES 202 432 [4] in a manner following the precedent set in ETS 300 375 [6].

The successful symbols resulting from the tests were all presented in ES 202 432 [4]. In addition to the formal symbols on the standard grid layout it was decided to add .pdf versions of all of the symbols and also two iconic versions which were adapted in accordance with ISO 80416-4 [14] for use on a screen or display.

10 Analysis of results

In general, the testing produced relatively low scores with only the symbols for signing and for spoken command producing a median comprehensibility judgement test score as high as 7. These results may not be surprising. ISO 9186 [15] calls for respondents who can be expected to be familiar with the referent. Since some of the facilities tested are not already in wide use, few of the respondents had a chance to become familiar with them. The very reason for developing the symbols was in order to increase knowledge of such services and facilities within the wider community.

Nevertheless it is believed that the results give a valid judgement of the symbols used.

It is clear that the ISO 9186 [15] testing methodology can only be fully effective if the respondents are already well acquainted with the subjects that the symbols are supposed to refer to. It is probable that new methods of testing are becoming necessary in the fast growing field of ICT. Some authorities have suggested alternative approaches.

Dr Austin Adams of the University of New South Wales, in private correspondence, suggested that a recall test would be the only valid test where a concept is new to most people. The recall test as used in Australia, in short, involves telling people what the symbol means and then asking them a week or so later in a "comprehension" test. If there are only a few symbols being tested, a group of at least 8 symbols should be assembled so as not to draw attention to the one or two that might be the centre of attention.

He also remarked that when trying to "estimate how many people out of a maximum of 10 that you would expect to understand the meaning of each symbol", the judgement was confused with assessing whether those people being thought about would understand the concept being symbolized.

Professor Hiroshi Fujimoto of the Faculty of Human Sciences, Waseda University, Japan at The Tactile Graphics Conference held in Birmingham UK in December 2005 reported that when testing tactile symbols, it was found useful to consider comments on the symbols as well as the simple score on the quality of the symbol.

As reported in clause 4.1.2, the tests for judged comprehensibility and for comprehension were carried out in parallel. When analysing the test results as described in clause 8, the additional information contained in the comments reported in the comprehension test gave extremely valuable assistance to the making of decisions as to the best available symbol. This was particularly notable in the cases of the symbols for subtitling and for signing.

11 Symbols in other modalities

In addition to the work on the five visual symbols, the Terms of Reference required that representations of the symbols in other modalities should be investigated. Therefore work was carried out on the possibility of deriving tactile and audible symbols, since some of the access services in question are primarily aimed at people with sight difficulties.

This work was extended to the preparation of tactile and audible symbols and, as a major exhibition intended for Blind and partially sighted people was scheduled during the period of the project (Sight Village, Birmingham, July 2006), the opportunity was taken to test them.

12 Tactile symbols

12.1 Usage

Tactile symbols can be provided as an alternative to visual symbols when the user for some reason or another is unable to see visual symbols. They can generally only be used for static information as normally there is no available means of changing them in response to some input signal.

It was considered that tactile symbols could be used either on:

- a) a button on a remote control or item of equipment; or
- b) the packaging for recorded media such as a DVD or Video; or
- c) for building signage.

12.2 Required symbols

For use on control buttons it was considered that Speech output, Spoken Command and Audio Description were relevant.

For packaging, it was considered that Speech output and Audio Description were relevant.

It was considered that building signage was not relevant to the current document.

Thus tactile symbols would be required for Speech output, Spoken Command and Audio Description.

12.3 Derivation of tactile symbols

The testing and analysis of the visual symbols was concluded before work on the design of the tactile symbols began, in order that the tactile symbols may be derived at least in part from the visual symbols chosen. The National Centre for Tactile Diagrams, associated with the RNIB in Birmingham England then undertook to prepare the symbols. There were a number of iterations of a set of designs based either on the visual symbols or on the metaphor behind them. The symbols had to be designed to give a suitable spacing and size of their various elements to enable them to be sensed and analysed by the user.

The design work finally produced three candidates for each of the three referents which are shown in figure 12. Two different technologies were used for the production of the test samples; swell paper and thermoform.

Swell paper is a special type of heat sensitive paper with microcapsules of alcohol embedded in the paper which burst when exposed to heat and make the surface of the paper swell up. The design is printed onto it in black, then it is passed through a heater. The black ink conducts heat and causes the printed part to expand and rise above the surface.

Thermoform diagrams are created from a process where a sheet of plastic is heated and sucked down on top of a model or master using a vacuum forming machine. The master can be made up from almost anything, although certain substances can be more durable than others.




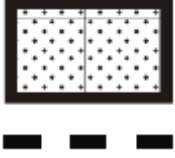








Visual Symbol	Tactile Symbol	Tactile Symbol	Tactile Symbol
 <p>Audio Description</p>	 <p>1</p>	 <p>2</p>	 <p>3</p>
 <p>Speech Output</p>	 <p>4</p>	 <p>5</p>	 <p>6</p>
 <p>Spoken command</p>	 <p>7</p>	 <p>8</p>	 <p>9</p>

Figure 12: Tactile symbols used for test

The two different technologies were used in order to compare how the symbols performed for different production methods.

12.4 Tests for tactile symbols

Given the currently available technology, the only way to test tactile symbols is for the prototypes to be physically in the presence of test subjects. Although this could have been done on a postal basis or by making individual visits, it was decided to exploit the opportunity afforded by an exhibition specifically for people with visual impairments called Sight Village which is run annually by Queen Alexandra College in Birmingham and which is free to visitors. This exhibition is naturally attractive to the population to whom the tactile symbols would be particularly pertinent.

It is clear that the comprehensibility judgement test of ISO 9186 [15] is not suitable for the testing of the tactile symbols as a number of variants of a given referent cannot be viewed simultaneously by the test subject and it was considered that the serial sampling implicit in tactile sensing would create too large a cognitive load. For similar reasons the normal test methodology of ETR 70 [5] was considered to be inappropriate.

As most of the test subjects would be likely to have difficulty in completing written test forms, all of the testing was carried out on a verbal question and answer basis. This necessitated some simplification of the normal test procedures.

For the tactile symbols there were three referents each with three possible versions, creating nine candidate symbols in all. The three different versions available could not be considered to represent familial sets.

Two test options were considered, one of presenting all nine candidates on one page and asking the subject which candidate best represented a stated referent. The second option was to present the nine candidates on separate cards and ask for each card, which referent it represented. The second option was chosen as each decision represented a choice of three alternative answers rather than nine.

As two technologies were used in the production of the test material, the two types of test material were used alternately during the testing and the type used was recorded.

Visitors to the stand were interviewed individually by the members of the task force. Each test subject was asked what they understood by each of the three access services. Their response was scored by the judge from 0, meaning they had no understanding of it, to 3, meaning they used and understood it. Then the access service was described using a specific script, so as not to bias the test. The script for tactile symbols appears in annex B.

Then each of the nine candidate symbols were presented in random order and the subject asked which referent it best represented. This produced data on hit rate, false alarm rate and missing values. The subjects were also asked how certain they were of their answers. The tester recorded these answers on a simplified three point scale. No testing was done for subjective suitability or for pictogram set preference. Any comments on the symbols made during the testing were recorded.

The age and sex of each test subject was recorded and they were asked if they were Braille or Moon readers or users of large print. Large print users were asked which font size they preferred using a simple chart with font sizes ranging from 12 to 24 point.

12.5 Tactile symbol test results

Sixty (60) subjects took part in the Tactile testing. 35 were male and 25 Female. Of these, 40 were Braille readers and 20 could read using large print. 2 subjects (3 %) were under 18, 14 (23 %) were aged from 18 to 30, 37 (61 %) were over 30 and under 60, 7 subjects (11 %) were over 60.

The results of the tests were recorded on paper and then transferred to a computer for analysis. Note was made of any relevant comments made by the test subjects.

The analysis of the results was based generally on the guidance set out in ETR 70 [5].

For each symbol, the number of correct answers was calculated and classed as hits. The wrong answers were counted and classed as false alarms. No answers were taken as missing values. The score for subjective certainty was determined by adding the numbers scored for the certainty of each answer.

The results are shown in table 7.

Table 7: Results of tactile testing

	Symbol	Hits	False Alarms	Missing values	Subjective Certainty	Winner
Audio Description	1	34	12	14	90	**
	2	31	9	20	74	
	3	18	8	34	35	
Speech output	4	15	14	31	32	
	5	16	8	36	36	
	6	19	7	34	45	**
Spoken Command	7	19	14	27	47	**
	8	14	18	28	29	
	9	14	13	33	32	

From these results, Symbol 1 was judged best for Audio Description, Symbol 6 was judged best for Speech output, and Symbol 7 was judged best for Spoken command.

The symbols which scored best on this basis are shown in figure 13.

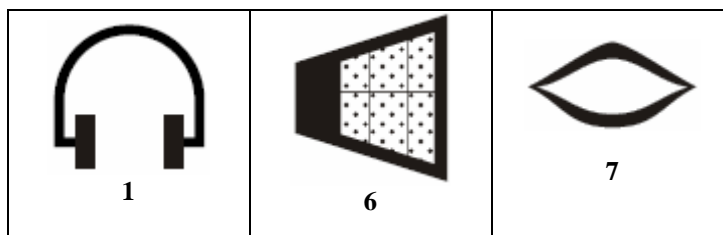


Figure 13: Chosen symbols

A closer examination of details of the test responses showed that there was a significant difference between the responses to thermoformed and to swell paper versions of the symbols.

Table 8: Results of testing thermoformed samples

	Symbol	Hits	False Alarms	Missing values	Subjective Certainty	Winner
Audio Description	1	17	4	10	48	
	2	20	2	9	49	**
	3	9	3	19	18	
Speech output	4	8	6	17	17	
	5	5	5	21	9	
	6	9	4	18	21	**
Spoken Command	7	12	8	11	32	**
	8	7	10	14	12	
	9	5	6	20	10	

Table 9: Results of testing swell paper samples

	Symbol	Hits	False Alarms	Missing values	Subjective Certainty	Winner
Audio Description	1	17	8	4	42	**
	2	11	7	11	25	
	3	9	5	15	17	
Speech output	4	7	8	14	15	
	5	11	3	15	27	**
	6	10	3	16	24	
Spoken Command	7	7	6	16	15	**
	8	7	8	14	17	
	9	9	7	13	22	

As can be seen from tables 8 and 9, the results for thermoformed samples are different from those in swell paper, the thermoformed showing symbols 2, 6 and 7 with the highest scores and swell paper showing 1, 5 and 7.

These both differ from the total results of 1, 6 and 7.

The comments received during testing suggested that both symbols 1 and 7 could be improved.

Comment was made on symbol 1 that the detail around the earphones made it difficult to comprehend as the gaps were confusing.

Symbol 7 was often interpreted as an eye. A number of subjects said that it would be clearer with a bow shaped upper lip. Others suggested a line in the middle to separate the upper and lower lip.

The symbols were amended as shown in figure 14.

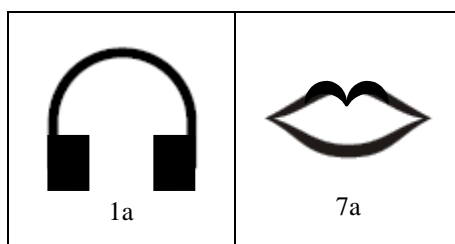






Figure 14: Amended tactile symbols

Test samples were made and a simple test was made to determine whether the changes were an improvement or not. Versions of the original and amended symbols were tested by blind subjects who were simply asked to state what they thought the symbol represented. This was considered to be sufficient as the comments received during the earlier testing had demonstrated that headphones were associated with Audio description and a mouth with Spoken command. Tests were performed with 17 subjects. Answers of headphones/earphones and mouth/lips were classed as hits, other answers as false alarms and don't knows as missing values. The results are given in table 10.

Table 10: Test results for amended symbols

Tactile Symbol	 1	 1a	 7	 7a
Hits	9	8	4	10
False alarms	7	8	11	3
Missing values	1	1	2	4

The results in table 10 show that there was no significant change with the amended headphone symbol but that the amended mouth symbol was recognized significantly more often.

12.6 Comment on the results

The tests carried out do appear to be a valid method of testing tactile symbols.

In view of the differences between thermoformed and swell paper samples it is suggested that further testing may be required before a final judgement can be made on the best symbol for each function.

13 Audible versions

13.1 Usage

Audible versions of symbols can either be provided as an alternative to visual symbols when the user for some reason or another is unable to see them or they can be used as active feedback to reinforce a visual message or display.

It was considered that audible versions of symbols could be used either:

- a) in connection with an item of equipment which had an audio output; or
- b) in association with building signage.

13.2 Required symbols

For equipment with an audio output, the relevant symbols were considered to be Audio Description, Speech output, Spoken Command and Subtitling.

It was considered that building signage was not relevant to the current document.

13.3 Derivation of audible symbols

The audible symbols were designed following the guidance set out in TR 101 041-1 [7]. It was decided to create the symbols as "Earcons", that is to say small meaningful musical phrases or tunes. Four earcons were designed to indicate "Service present", "Service not supported", "Activate access" to a service and "deactivate access". Following the guidance of the report, positive responses were designed with generally rising sequence of notes and negative responses were designed with generally falling sequences. Positive messages were represented by harmonious notes and negative by discordant sequences. Cadence (rhythm) was used to assist the memorability of the earcons.













It was decided that the earcons should be played on four different instruments so as to distinguish between the four services that were required to be described.

Thus the four states of the service access were indicated by four "melodies" and the four services were indicated by four "instruments". Because the "Service present", "Service absent" earcons were liable to be presented without any specific action from the user it was considered advisable that they should be short, consisting of probably only two notes. As the "Activate access" to a service and "deactivate access" (on/off) melodies resulted from a user action it was considered that they could be longer, possibly consisting of three or four notes.

For the test, three tunes were composed for both the on/off and the present/absent earcons. These twelve tunes were then arranged for playing on eight instruments.

The 12 earcons, or tunes, used in the test are shown in table 11. All of the earcons exist as .mp3 files in the electronic attachment to the present document.

Table 11: The earcons tested

Earcon	On	Off	Present	Absent
E1				
E2				
E3				

The eight different instruments offered for the testing were xylophone (MIDI 14), bright acoustic piano (MIDI 02), oboe (MIDI 69), pick bass (MIDI 35), muted trumpet (MIDI 60), violin (MIDI 41), choir aahs (MIDI 53) and celesta (MIDI 09).

13.4 Tests for audible symbols

It is clear that the comprehensibility judgement test of ISO 9186 [15] is not suitable for the testing of the audible symbols as a number of variants of a given referent cannot be simultaneously presented and it was considered that the serial sampling implicit in an audio test would create too large a cognitive load. For similar reasons the normal test methodology of ETR 70 was considered to be inappropriate.

It was decided once again to exploit the opportunity afforded by Sight Village for the performance of the tests.

As most of the test subjects would be likely to have difficulty in completing written test forms, all of the testing was carried out on a verbal question and answer basis. This necessitated some simplification of the normal test procedures.

For the audible symbols there were four referents each with four possible versions, creating sixteen candidate symbols in all.

Visitors to the stand were interviewed individually by a member of the task force. Each test subject was asked what they understood by this access service. Their response was scored by the judge from 0, meaning they had no understanding of it, to 3, meaning they used and understood it. Then the access service was described using a specific script, so as not to bias the test. The script for audible symbols appears in annex C.

The on/off melodies were presented as three pairs of symbols and the present/absent melodies as a separate three pairs. In each case the subject was asked to choose their preferred melody.

For the access service choice, one melody (the "on" melody) was played on eight different instruments. In each case the subject was asked which particular access service it suggested to them.

The age and sex of each test subject was recorded and any difficulty of hearing was noted.

13.5 Audible symbol test results

As there was only one test rig for audible symbols it only proved possible to test 15 subjects. Of these 4 were male and 11 female. Of these only one reported difficulty in hearing. Two were under 18 years of age, six were aged between 18 and 30, six between 30 and 60, and one was over 60 years old.

The results of the testing were entered directly into the computer that was being used to generate the test audible symbols.

The results of the test of the earcons are shown in table 12. The numbers indicated the number of times an earcon was identified with a feature activity.

Table 12: Results of testing earcons

Earcon ID	Feature On	Feature Off	Present	Absent
E1	2	2	5	1
E2	9	11	3	7
E3	4	2	7	7

The preferred Earcons are shown emboldened. The results were clear except for "absent". In this case, symbol E3 was preferred as it was in the same family as the chosen "present" symbol. The selected earcons are shown in figure 15.

Feature On
Earcon 2 on

Feature Off
Earcon 2 off

Feature Present
Earcon 3p

Feature Absent
Earcon 3a

Figure 15: Selected earcons

For the access service choice, where one earcon (the "on" earcon) was played on eight different instruments, the results are shown in table 13. In each case the number represent the number of times each instrument was associated with a particular access service. The highest scores are shown emboldened.

Table 13: Instrument/access service association

Instrument	Audio Description	Speech output	Spoken command	Sub-titling
1 Xylophone	2	1	1	1
2 Bright acoustic piano	1	2	2	2
3 Oboe	2	3	1	1
4 Pick bass	3	1	1	1
5 Muted trumpet	2	1	1	1
6 Violin	5	2	1	0
7 Choir aahs	2	0	6	1
8 Celesta	3	0	1	6

For Audio description, instrument 6, the violin, can be interpreted as giving 5 hits and 15 false alarms with no missing values.

For Speech output, instrument 3, the oboe gives 3 hits, 7 false alarms and 2 missing values.

For Spoken command, instrument 7, the choir aahs, gives 6 hits, 8 false alarms and no missing values.

For Sub-titling, instrument 8, the celesta gives 6 hits, 7 false alarms and one missing value.

13.6 Comment on the results

The tests carried out do appear to be a valid method of testing audible symbols. It seems probable that the tests on such symbols do not need to be restricted to blind subjects.

In view of the small number of subjects tested it is considered that the results cannot be considered to be conclusive. The results of the testing of the melodies appear to support the recommendations of TR 101 041-1 [7] as far as can be determined.

It is remarkable that in three of the access services a significant number of subjects were able to associate an instrument with a particular service, although the results for speech output are not so evident.

Annex A: First selection of symbols

A.1 "Subtitle" symbol question

In order to reduce the very large number of candidate symbols that were collected in accordance with the requirements of ISO 9186 [15], the following question was asked in a web questionnaire that all TC HF members were invited to visit.

Subtitling

Description

Subtitling is a frequently changing display of text which may be used for two purposes: it can be provided for the purpose of foreign language translation of the speech being used in the content, or it can be provided as an aid for someone who cannot hear the sound. These two uses are slightly different, in that subtitles intended to assist someone unable to hear the sound will also need to describe specific sound effects relevant to the content.

Scoring

Please score each of these symbols out of 10, according to how suitable you think they represent the function. The score should represent how appropriate you think each symbol is, where 0 is unacceptable and 10 is most suitable. If you do not give a symbol a score it will automatically score 0. You can use the TAB key and the number keys to enter your score, if you prefer to use the keyboard rather than the mouse.

 Please select ▾	 Please select ▾	 Please select ▾	 Please select ▾	 Please select ▾
 Please select ▾	 Please select ▾	 Please select ▾	 Please select ▾	 Please select ▾
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Next

The answers produced a ranking for all of the candidate symbols and the symbols that were used for the final comprehensibility judgement and comprehension tests were chosen as described in clause 5.

Annex B: Tactile testing instructions for judges

The following instructions were prepared for the judging of tactile symbols:

Sight Village tactile testing instructions for judges

This document explains how to proceed with each test subject.

Introduction

'In order to help people who use access services, we have been selecting a set of graphical symbols that everybody will use. These have been tested by a large number of people. We now want to choose some tactile symbols to be used by people who can't see the graphical symbols. We would like to you take part by helping us in the selection process. Can you spare us ten minutes to try them out?'

Audio description

'What do you understand by the term "audio description"?'

'Audio description is a spoken narration, fitting between the dialogue, that describes what is happening in the pictures of a television programme or film. For example, when you are watching a film, somebody would be saying things like, "A car pulls up and a tall man in a raincoat gets out".'

'Are you familiar with this type of service?'

Select one of:

0. Not heard of
1. Heard of but never used
2. Used occasionally
3. Used often.

Speech output

'What do you understand by the term "Speech output"?'

'Speech output is when a product or service, such as a self-service kiosk, talks to you so that you don't have to read information displayed on a screen. For example, a Video Recorder may say to you "Recording".'

'Are you familiar with this type of service?'

Score their response from 0 to 3.

Spoken command

'What do you understand by the term "Spoken command"?'

'Spoken command is the capability for a product or service to respond to your spoken instructions. For example, you might say to your mobile phone, "Call John".'

'Are you familiar with this type of service?'

Score their response from 0 to 3.

Tactile testing

There are two piles of candidate symbol cards: one thermoform and the other swell paper. Between each test subject, alternate your pile of cards. Present each of the nine tactile symbol candidates in turn in a random order to the subject. For each one, ask which of the three access services you have just described to them it best represents. They may only answer one. Ask how certain they are of each answer, and score it from 1 to 3 where 1 is uncertain and 3 is certain.

Control variables

Record the following:

Sex (Male or Female)

Age group: Under 18(C); 18 to 30(Y); 30 to 60(M); Over 60(O).

Do you read Large Print books? If so, what is your preferred point size? (Show test page)

Do you regularly use Braille, Moon or any other touch-based reading? (Yes or No)

What type of material was used for the test (Thermoform or Swell paper).

Thank them

'When we have analysed the results, we will be producing a Technical Report for manufacturers and the like to make use of, and encouraging them to use the most appropriate symbols to benefit you in using access services.'

Thank them for their time and wish them a pleasant visit to Sight Village.

Give them a sticker to wear.

Annex C: Auditory testing instructions for judges

The following instructions were prepared for the judging of tactile symbols:

Sight Village auditory testing instructions for judges

This document explains how to proceed with each test subject.

Audio description

'What do you understand by the term "audio description"?'

'Audio description is a spoken narration, fitting between the dialogue, that describes what is happening in the pictures of a television programme or film.'

'Are you familiar with this type of service?'

Score their response 0 (meaning not at all), 1 (meaning they are familiar with it but do not use it on a regular basis) or 2 (meaning they use it) in Familiarity.

Speech output

'What do you understand by the term "Speech output"?'

'Speech output is when a product or service, such as a self-service kiosk, talks to you so that you don't have to read information displayed on a screen.'

'Are you familiar with this type of service?'

Score their response from 0 to 2 Familiarity.

Spoken command

'What do you understand by the term "Spoken command"?'

'Spoken command is the capability for a product or service to respond to your spoken instructions.'

'Are you familiar with this type of service?'

Score their response from 0 to 2 in Familiarity.

Subtitles

'What do you understand by the term "Subtitles"?'

'Subtitles are captions of text displayed on the screen which provide a transcription of the dialogue in order to assist somebody unable to hear the sound.'

'Are you familiar with this type of service?'

Score their response from 0 to 2 in Familiarity.

History

Document history		
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V1.1.2	November 2006	Publication