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Contents

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Foreword

This ETSI Technical Report (ETR) was produced by the Human Factors (HF) Technical Committee of the European Telecommunications Standards Institute (ETSI). Assistance in the collection of documentation and comments was also provided by the members studying Question 18/1 of Study Group 1 of ITU-TS.

ETRs are informative documents resulting from ETSI studies which are not appropriate for European Telecommunication Standard (ETS) or Interim European Telecommunication Standard (I-ETS) status. An ETR may be used to publish material which is either of an informative nature, relating to the use or the application of ETSs or I-ETSs, or which is immature and not yet suitable for formal adoption as an ETS or an I-ETS.

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1 Scope

This ETR contains a set of guideline principles for the design of user instructions for public telecommunications terminals, particularly as applied to payphones. These instructions are intended to be mounted on or next to the terminal.

These guidelines are based on human factors practice and the analysis of telephone instructions available world-wide.

This ETR is intended for designers of public telecommunications terminals and booths in order to enhance their use. Should the design activity lead to trade-offs, one of the targets of this ETR is to ensure that any such trade-off favours the user.

This ETR is not a standard but is based on existing standards. It contains references to original source material for further reading by interested parties.

Annex A provides two examples of how the design principles can be implemented. The examples refer to an international panel to be put near public telephone terminals. A subset of such a panel can be put on the front of the terminal itself.

2 References

This ETR incorporates by dated and undated reference, provisions from other publications. These references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETR only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1] ITU-T Recommendation E.134: "Human factors aspects of public terminals: generic operating procedures".

[2] Norman D.A.: "The psychology of everyday things", Basic Books, Inc. Publishers, New York, 1988.

[3] RACE ISSUE project (R1065), page 39: "Human Factors Guidelines for Multimedia".

[4] ISO 3864 (1984): "Safety colours and safety signs".

[5] The Illumination Engineering Society (IES) (London, 1977): "IES Code for Interior Lighting".

[6] Spencer H.: "The visible world", New York: Visual Communication Books (ISBN 8038-7733-1), 1969.

[7] ETR 116 (1994): "Human Factors (HF); Human factors guidelines for ISDN Terminal equipment design".

[8] ITU-T Recommendation E.135: "Human factors aspects of public telecommunications terminals for people with disabilities".

[9] ISO 4196 (1984): "Graphical symbols - Use of arrows".

[10] CCITT Recommendation E.121: "Pictograms and symbols to assist users of the telephone service".

[11] ITU-T Recommendation E.161: "Arrangement of digits, letters and symbols on telephones and other devices that can be used for gaining access to a telephone network".

[12] IEC 416 (1988): "General principles for the creation of graphical symbols for use on equipment".

3 Abbreviations

For the purposes of this ETR, the following abbreviations apply.

HF	Human Factors
IEC	International Electrotechnical Committee
IES	Illumination Engineering Society
ISDN	IntegratedServices Digital Network
ISSUE	IBC Systems and Services Usability Engineering
RACE	Research in Advance Communication in Europe

4 Introduction

These guideline principles are intended for the design of a set of user instructions for public terminals. The user instructions can be put on the terminal front or on the wall by the terminal.

While public telecommunications terminals should be as self-explanatory as possible, user instructions are often necessary, given the variety of world-wide technical implementations.

These guidelines, based on experimental results and human factors expertise, are intended to improve the design of user instructions and, eventually, enhance the use of public terminals and user satisfaction.

These guidelines should be used in conjunction with consultation of user groups. Designers should test their implementations before making them available to the general public.

5 Guideline principles

5.1 Instructions

It should be a goal for designers to produce as simple instructions as possible.

The instructions should be consistent with the functions and procedures supported by the terminal. Where the functions and/or procedures differ from the ones reported in ITU-T Recommendation E.134 [1], extra care should be taken to ensure that the instructions support the user in interacting with the terminal.

5.2 Information amount

The amount of information depends on the context of use (e.g. international users).

The overall amount of instructional material should be kept to a minimum through the appropriate design of the equipment.

EXAMPLES:
- transferring the card initialisation task from the user to the terminal;
- use of design features which ensure correct card insertion (see "The psychology of everybody things" [2]);
- flexibility as to the order of the procedural steps;
- automatic card ejection after call completion;
- provision of directory assistance via operator.

5.3 Information content

Information should be available on the following list of items.

EXAMPLES:
- means of payment accepted;
- user procedures to make a regular call;
- user procedures to make an emergency call;
- facilities for hearing-impaired persons;
- numbers to be dialled to reach the operator;
- international calls.

5.4 Completeness of information

Where instructions are common across different contexts, then the full set of instructions should be replicated for each procedure. A completely separate box of instructions showing only the differences between procedures is not recommended.

EXAMPLE: Care needs to be taken when designing user procedures to make a call by using coins, prepaid cards, credit cards.

5.5 Compatibility of instructions

The instructions should support existing user experience. Opportunities should be taken to exploit instructional elements from non-telecommunications devices for similar functions.

EXAMPLE: Instructions for card insertion in automatic cash dispensers.

5.6 Instructional steps

The instructions relevant to the various steps of the user procedures should be displayed vertically or horizontally on a single column or line and numbered in sequence. If this layout cannot be achieved, the correct sequence should be made clear by spacing and numbering. One action should be indicated on each step (e.g. lift receiver, insert card, etc.).

EXAMPLE:

1 ....

2 ....

3 ....

4 ....

or

1	2	3	4
.	.	.	.
.	.	.	.
.	.	.	.

Instructions on optional steps, such as follow-on call or replacement of means of payment, should be inserted unnumbered at the appropriate point in the sequence and made clearly distinguishable by means of suitable solutions. For example, indentation, different border lines, different colours, etc..

5.7 Modular presentation

The information can be presented with different degrees of detail in order to take account of different levels of user experience.

EXAMPLE: Instructions on user procedures presented in 2 contiguous areas: pictograms in one area (for experienced users) and explanatory text in another area (for users who need further explanations).

5.8 Locating information

Location and identification of different categories of information can be enhanced by the use of boxing, highlighting, colour, etc. Colour should not be the only criterion for distinguishing different sets of information.

Excess of enhancement is counterproductive (see page 39 of RACE ISSUE project R1065 for further information [3]).

5.8.1 Boxing

Boxes may be used to separate clusters of different types of information.

EXAMPLE:
- regular calls;
- emergency calls;
- international calls;
- aids for people with disabilities;
- additional information.

5.8.2 Highlighting

Critical information should be highlighted by the use of prominent position, contrasting colours, large size or the distinctiveness of fonts.

EXAMPLE:
- emergency calls;
- suppression of zero in area codes when dialling international numbers;
- indication of movements.

5.8.3 Colours

The use of colours should take account of the conventional meaning of the different colour codes as given in ISO 3864 [4].

EXAMPLE: Red should be used for:
- alarm (emergency numbers);
- prohibition (no-smoking sign inside telephone booth).

5.9 Information legibility

Good legibility can be achieved through an appropriate combination of:

- the contrast with the background (high positive contrast, e.g. dark letters on light background, is recommended. Coloured background for text and combination of certain colours, e.g. red-green, red-blue, blue-yellow, should be avoided. Colour contrast could be reinforced by texture changes);

- the position of instructional panel;

- the illumination of the environment (the luminance of the surface of the instructional panel should not be less than 100 lux/square metre as stated in the "IES Code for Interior lighting" [5]);

- the type of surface finish (with high reflective surfaces great care should be taken to avoid problems of glare);

- the size of font.

EXAMPLE: At a (normal) reading distance of 305 mm to 355 mm (12 inches to 14 inches) a 12 point font should be used. Both smaller and larger fonts reduce legibility. For other reading distances and angles other than 90 degrees, the font size should be increased or decreased in proportion (as prescribed in the "visible world" by H. Spencer [6]. This assumes adequate illumination and normal or corrected vision.

Legibility for visually-impaired users and for wheelchair users should be enhanced by the use of enlarged and well contrasted characters, and by tilting the panel of instructions downwards, respectively (see also subclause 5.17, ETR 116 [7] and ITU-T Recommendation E.135 [8]). To meet the needs of people with low visual acuity it is recommended that bigger lettering be used and the type of font be easy to read.

5.10 Indication of movements

Correct direction and sequence of movements should be identified unambiguously (as stated in ISO 4196 [9]).

5.11 Emergency information

Instructions on emergency services should be prominent and concise.

EXAMPLE: Only show the name and/or pictogram identifying a given service, the telephone number and the toll-free indication.

5.12 Labelling

User interface components (push-buttons, slots, lamps, etc.) should be clearly labelled. Full labels are more meaningful and unambiguous than acronyms and abbreviations. When space on the top of push-button is insufficient, the label should be put near to the push-button.

Labels should be positioned so that there is no ambiguity in matching the label to the right component.

5.13 Pictographic instructions

Symbols and pictograms, where appropriate, are preferable to text due to their conciseness and independence of language and education (see ITU-T Recommendation E.121 [10]). To minimize misunderstandings, pictograms can be reinforced by text (see also subclause 5.7).

When using pictographic instructions, schematic but not too abstract representations of the user interface are preferable to high-fidelity ones because details could overshadow the significant functional items (see ITU-T Recommendation E.161 [11]).

Size of pictogram

To ensure the correct recognition of an actual graphical symbol, the minimum overall size "a" of a pictogram, in units equivalent to the viewing distance "L", is determined by:

$a = L/100 * 1,5$

(based on IEC 416 [12], par. 10.4).

5.14 Textual instructions

If text is used, technical expressions should be avoided.

5.15 Choice of language

To prevent the instructional panels from getting overcrowded, the number of languages should be kept to a minimum, typically no more than two. If there are legal or other requirements which demand the use of three or more languages, alternative technological solutions are recommended (e.g. visual displays). The choice of how many and what languages is left to the Service Providers.

5.16 Multiple languages

If the instructions on the panel are provided in more than one language, care should be taken to help the user locate the desired language.

EXAMPLE: Different size and type of fonts (regular, italics), different position of different languages (language A always followed by language B on the same or the next line). Italics or smaller font could be understood to indicate information which is less important, and should be used with care if it is not intended to convey such a meaning.

5.17 Alternative methods for presenting instructions

Instructions provided via multiple channels are useful for the general public and are highly recommended for people with disabilities (see ITU-T Recommendation E.135 [8]).

EXAMPLE: Printed, tactile (engraved, embossed, Braille), auditory instructions; instructions presented on visual displays.

When additional facilities exist for people with disabilities, e.g. textphones, hearing- and speech-aid devices, then the people with disabilities should be informed of this possibility and how to use the telephone.

5.18 International calls

The complete string of digits to be dialled when making international calls (access code, country code, area code and telephone number) should be indicated by an example, unless this information is provided by the operator.

EXAMPLE: 00 44 171 555 6666 (Great Britain 44, London (0)171).

5.19 Tariffs

Information on tariffs is often lengthy and complicated. If this information is not provided automatically (e.g. by dialling before inserting means of payment) or through the operator, at least the minimum fee required to initiate a local call should be indicated.

5.20 Other information

The decision on whether to provide further information is left to the Service Providers.

EXAMPLE: Telephone numbers of helpline, faults report, vehicle recovery; where to buy prepaid cards or to find the next payphone.

An example of how these guidelines can be applied is provided in annex A. The example concerns:

- prepaid cards;
- Italian payphones (two separate slots are used to insert and retrieve the prepaid card);
- two languages (Italian and English);
- provision of area and country codes through an operator.

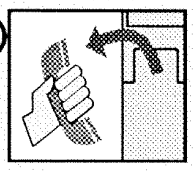
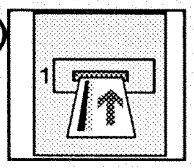
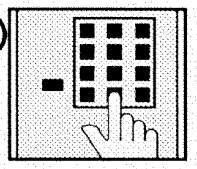
6 Index

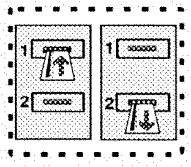
Annex A: Example of the implementation of the design principles

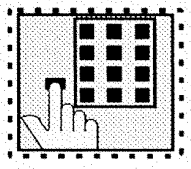
TELEFONO A SCHEDA

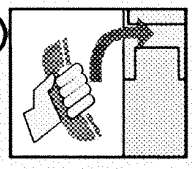
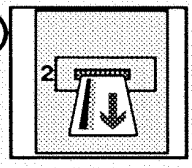
TELEFONATE URBANE, NAZIONALI E INTERNAZIONALI
QUESTO TELEFONO ACCETTA SOLO SCHEDE PREPAGATE

PER TELEFONARE

1.  Alzare il ricevitore
2.  Inserire la scheda come in figura
3.  Comporre il numero

 All'esaurimento della scheda inserirne una nuova

 Per un'altra chiamata premere il tasto

4.  Riagganciare il ricevitore
5.  Ritirare la scheda

 Gli utenti con protesi acustica spostino l'interruttore in posizione T

TELEFONATE INTERNAZIONALI

00 + Prefisso stato
+ Prefisso citta`
+ Numero abbonato

Esempio: 00 44 71 555 6666
[Gran Bretagna: 44, Londra:(0)71]

INFORMAZIONI ELENCO ABBONATI

 Nazionale (gratuito): **12**

 Internazionale (gratuito): **172**

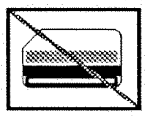
Le schede sono in vendita presso i distributori automatici e nei negozi / uffici che espongono il simbolo:

Punto di vendita piu' vicino:
Via Roma 34 b

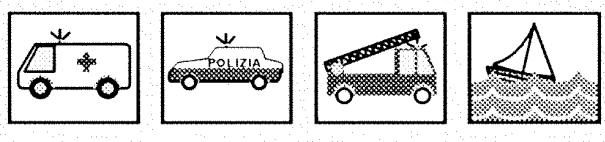
Telefono a schede piu' vicino:
Corso Einaudi
ang. Via Italia

Telefono a monete piu' vicino:
Piazza Repubblica

S O S : 112



Chiamata gratuita



AMBULANZA | POLIZIA | VIGILI DEL FUOCO | GUARDIA COSTIERA

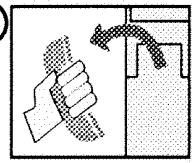
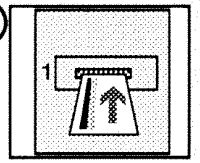
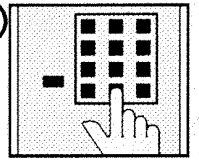
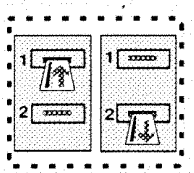
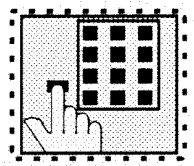
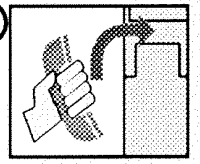
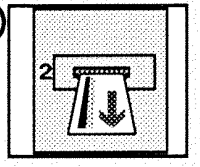
Questo telefono si trova a:
Stazione F.S. Porta Nuova

Numero del telefono:
782 4351

TELECOM ITALIA

TELEFONO A SCHEDA
CARDPHONE

TELEFONATE URBANE, NAZIONALI E INTERNAZIONALI - QUESTO TELEFONO ACCETTA SOLO SCHEDE PREPAGATE
LOCAL, NATIONAL AND INTERNATIONAL CALLS - THIS PAYPHONE ACCEPTS PHONECARDS ONLY

①	②	③			④	⑤
						
Alzare il ricevitore	Inserire la scheda come in figura	Comporre il numero	All'esaurimento della scheda inserirne una nuova	Per un'altra chiamata premere il tasto	Riagganciare il ricevitore	Ritirare la scheda
Lift receiver	*Insert phonecard as indicated*	*Dial number*	*If card expires, insert new phonecard*	*For another call press the button*	*Replace receiver*	*Remove phonecard*

TELEFONATE INTERNAZIONALI

00 + Prefisso stato + Prefisso citta'
+ Numero abbonato

Esempio: 00 44 71 555 6666
[Gran Bretagna: 44, Londra:(0)71]

INTERNATIONAL CALLS

00 + Country code + Area code
+ Phone number
Example: 00 44 71 555 6666
[Great Britain: 44, London: (0)71]

Gli utenti con protesi acustica spostino l'interruttore in posizione T

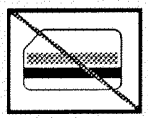
Users of behind the ear hearing aids move the switch to T position

INFORMAZIONI ELENCO ABBONATI
DIRECTORY ASSISTANCE

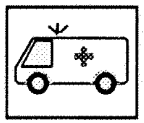
Nazionale (gratuito): *National (free):* **12**

Internazionale (gratuito): *International (free):* **172**

SOS: 112



Chiamata gratuita/*Free call*



AMBULANZA	POLIZIA	VIGILI DEL FUOCO	GUARDIA COSTIERA
AMBULANCE	*POLICE*	*FIRE BRIGADE*	*COASTGUARD*

Ubicazione del telefono:/ *Payphone location:*
Stazione F.S. Porta Nuova

Numero del telefono:/ *Payphone number:*
782 4351

History

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