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SERIES E: OVERALL NETWORK OPERATION, TELEPHONE SERVICE, SERVICE OPERATION AND HUMAN FACTORS

Operation, numbering, routing and mobile services – International operation – General provisions concerning users

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User instructions for payphones

ITU-T Recommendation E.137

(Previously CCITT Recommendation)

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ITU-T RECOMMENDATION E.137

USER INSTRUCTIONS FOR PAYPHONES

Summary

This Recommendation contains a set of guidelines for the design of user instructions for public telecommunications terminals. These guidelines are grouped into three main categories: general guidelines, guidelines for fixed (printed) instructions and guidelines for dynamic (displayed) instructions. An example of how the guidelines may be implemented is provided in Annex A.

Source

ITU-T Recommendation E.137 was prepared by ITU-T Study Group 2 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on the 26th of May 1997.

FOREWORD

ITU (International Telecommunication Union) is the United Nations Specialized Agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the ITU. The ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Conference (WTSC), which meets every four years, establishes the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

INTELLECTUAL PROPERTY RIGHTS

The ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. The ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, the ITU had/had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

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Recommendation E.137

USER INSTRUCTIONS FOR PAYPHONES

(Geneva, 1997)

1 Scope

This Recommendation contains a set of guideline principles for the design of user instructions for public telecommunications terminals, particularly as applied to payphones. These instructions may be mounted on or next to the terminal, or may be presented dynamically on a visual display.

These guidelines are based on human factors practice, on experimental results and the analysis of telephone instructions available worldwide.

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

Annex A contains an example of how the design principles for fixed instructions may be implemented. The example refers to a panel to be placed near public telephone terminals. A subset of such instructions may be placed on the front of the terminal itself.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; all users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

[1] ETSI ETR 116 (1994), *Human factors guidelines for ISDN terminal equipment design*.

[2] ITU-T Recommendation E.121 (1996), *Pictograms, symbols and icons to assist users of the telephone service*.

[3] ITU-T Recommendation E.134 (1993), *Human factors aspects of public terminals: generic operating procedures*.

[4] ITU-T Recommendation E.135 (1995), *Human factors aspects of public telecommunication terminals for people with disabilities*.

[5] ITU-T Recommendation E.161 (1993), *Arrangement of digits, letters and symbols on telephones and other devices that can be used for gaining access to a telephone network*.

[6] IES Code for Interior Lighting, *The Illumination Engineering Society*, London 1977.

[7] ISO 3864:1984, *Safety colours and safety signs*.

[8] ISO 4196:1984, *Graphical symbols – Use of arrows*.

[9] IEC Publication 416 (1988), *General principles for the creation of graphical symbols for use on equipment*.

3 Abbreviations

This Recommendation uses the following abbreviations.

CCITT International Telegraph and Telephone Consultative Committee

ETR ETSI Technical Report

HF Human Factors

IEC International Electrotechnical Commission

IES Illumination Engineering Society

ISDN Integrated Services Digital Network

ISO International Organization for Standardization

ISSUE IBC Systems and Services Usability Engineering

ITU-T International Telecommunication Union – Telecommunication Standardization Sector

RACE Research in Advanced Communication in Europe

4 Introduction

4.1 While the operating procedures of public telecommunication terminals should be as intuitive and self-explanatory as possible, user instructions are often necessary, given the variety of worldwide technical implementations.

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

4.3 The guidelines are divided into three clauses: the first contains general guidelines, the second contains guidelines referring to fixed instructions, and the third applies to messages presented dynamically on visual displays.

5 General guidelines

5.1 Instructions – General

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

5.1.2 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 Recommendation E.134 [3], extra care should be taken to ensure that the instructions support the user in interacting with the terminal.

5.2 Amount of information

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

Examples

– transferring the card initialization task from the user to the terminal;

– use of design features which ensure correct card insertion (see Norman, 1988; Bibliography [1]);

– flexibility as to the order of the procedural steps;

– automatic card ejection after call completion;

– provision of directory assistance via operator.

5.3 Compatibility of instructions

5.3.1 The instructions should support existing user experience. Where applicable, opportunities should be taken to exploit instructional elements from non-telecommunications devices for similar functions.

Example

Instructions for card insertion in automatic cash dispensers.

5.4 Information legibility

5.4.1 Good legibility can be achieved through an appropriate combination of:

– 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" [6]).

– Appropriately chosen size of font.

Example

At a (normal) reading distance of 305-355 mm (12-14 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 (see Spencer, 1969; Bibliography [3]). This assumes adequate illumination and normal or corrected vision.

Legibility for visually-impaired users and for wheelchair users should be enhanced by use of enlarged and well contrasted characters, and by tilting downwards the panel of instructions, respectively (see also subclause 3.6, ETR 116 [1] and Recommendation E.135 [4]). To meet the needs of people with low visual acuity, it is recommended that larger lettering be used and the type of font be easy to read.

5.5 Textual instructions

5.5.1 Text should be short and clear.

5.5.2 Technical expressions should be avoided (e.g. "receiver" is preferable to "handset").

5.5.3 For the sake of brevity, pleasantries (e.g. "please", "thank you") can be omitted.

5.5.4 The same word should be used to indicate the same object/action throughout the system-to-user dialogue. For example, use either "dial" or "enter", not both.

5.5.5 The same terms should be used for the same things throughout the instructions. Terms which might sound as synonyms to the user may cause confusion and should be avoided.

5.6 Alternative methods for presenting instructions

5.6.1 Instructions provided via multiple channels are useful for the general public and highly recommended for people with disabilities (see Recommendation E.135 [4]).

Example

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

5.6.2 When additional facilities exist for people with disabilities, e.g. textphones, hearing- and speech-aid devices, information should be available on how they can be used.

6 Guidelines for fixed instructions

6.1 Amount of information

6.1.1 The amount of information depends on the context of use (e.g. no information is needed for international users if the telephone is not enabled for international communication).

6.2 Information content

6.2.1 Information should be available on items such as the following:

– 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.

6.3 Completeness of information

6.3.1 Where instructions are common across different procedures, then the full set of instructions should be replicated for each procedure. A completely separate set 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.

6.4 Instructional steps

6.4.1 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 is not possible, 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 (first step)

2 (second step)

3 (third step)

4 (fourth step)

or

1	2	3	4
(first step)	(second step)	(third step)	(fourth step)

6.4.2 Instructions on optional steps, such as follow-on call or replacement of expired card, should be inserted unnumbered at the appropriate point in the sequence and made clearly distinguishable by means of suitable solutions.

Example

– indentation;

– different border lines;

– different colours, etc.

6.5 Modular presentation

6.5.1 The information may 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 two contiguous areas: pictograms in one area (for experienced users) and explanatory text in another area (for users who need further explanations).

6.6 Locating information

6.6.1 Location and identification of different categories of information can be enhanced by the use of borders, highlighting, colour, etc. Colour should not be the only criterion for distinguishing different sets of information. Excess of enhancement is counterproductive. For example, not more than five colours should be used (see page 39 of RACE ISSUE project R1065 for further information; Bibliography [2]).

6.6.2 Borders

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

Example

– regular calls;

– emergency calls;

– international calls;

– support for people with disabilities;

– additional information.

6.6.3 Highlighting

Critical information should be highlighted by prominent position, high contrast colours, large size or distinctive fonts.

Example

– emergency calls;

– suppression of zero in area codes (where applicable) when dialling international numbers;

– indication of movements.

6.6.4 Colours

The use of colours should take account of the conventional meaning of the different colour codes as given in ISO 3864 [7].

Example

Red should be used for:

– alarm (emergency numbers);

– prohibition (e.g. no-smoking sign inside telephone booth).

6.7 Information legibility

6.7.1 High 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 the instructional panel;

– the type of surface finish (with high reflective surfaces great care should be taken to avoid problems of reflections and glare).

6.8 Indication of movements

6.8.1 Correct direction and sequence of movements should be identified unambiguously (as stated in ISO 4196 [8]).

6.9 Emergency information

6.9.1 Instructions about 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.

6.10 Labelling

6.10.1 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 the push-button.

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

6.11 Pictographic instructions

6.11.1 Symbols and pictograms, where appropriate, are preferable to text due to their conciseness and independence of language and education (see Recommendation E.121 [2]). To minimize misunderstandings, pictograms can be reinforced by text (see also 6.5.1).

6.11.2 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 Recommendation E.161 [5]).

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

$$(L/100) \times 1.5$$

(based on IEC 416 [9], 10.4).

6.12 Choice of language

6.12.1 To prevent 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 require the use of three or more languages, alternative technological solutions are recommended (e.g. electronic visual displays). The choice of what languages to use is left to the service providers.

6.13 Multiple languages

6.13.1 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 same or next line).

6.14 International calls

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

Example

0044 171 5556666

where:

– 00 is the international code;

– 44 is the country code for Great Britain;

– 171 is the area code for London;

– 5556666 is the local number.

6.15 Charging

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

6.16 Other information

6.16.1 Further information may be provided as needed.

Example

Telephone numbers of helpline, for reporting faults, for emergency vehicle towing service; where to buy prepaid cards or where 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 (separate slots are used for inserting and retrieving the prepaid card);

– provision for obtaining area and country codes from the operator.

7 Guidelines for dynamic instructions

7.1 Instructional steps

7.1.1 The user should be guided in the use of the terminal throughout the call by means of prompt and feedback visual messages. These messages should be provided at each necessary step.

7.1.2 Different feedback/prompt messages should be used to indicate the status and the change of status of a service (e.g. "The service is active" gives status, whereas "The service is activated" gives change of status information).

7.1.3 Written messages are mostly appreciated by users because of their static presentation. Therefore, scrolling should be avoided. If this is not possible, the scrolling speed should take account of a low average reading pace to avoid both frustration and anxiety.

7.2 Highlighting

7.2.1 Highlighting of critical information may be achieved in a dynamic display through flashing and/or acoustic signals drawing users' attention to the display.

7.3 Legibility of displays

7.3.1 The display should be positioned on the terminal and tilted in such a way as to be conspicuous and readable by all users, including people with visual impairment, short stature, etc.

7.3.2 Contrast and colours used for text and background should be chosen so as not to create legibility problems for certain categories of users or under particular lighting conditions.

7.4 Textual instructions

7.4.1 The display size (number of lines and character size) should be large enough to accommodate the full length of the messages. Abbreviations should be avoided as far as possible, because different cultures may use different abbreviation strategies which can make it difficult to guess the correct meaning. E.g. truncation ("ext." for extension), syllable syncope ("int'l" for international), vowel syncope ("ctrl" for control), acronym ("ISDN" for Integrated Services Digital Network), syllable replacement ("xing" for crossing), etc.

7.5 Choice of language

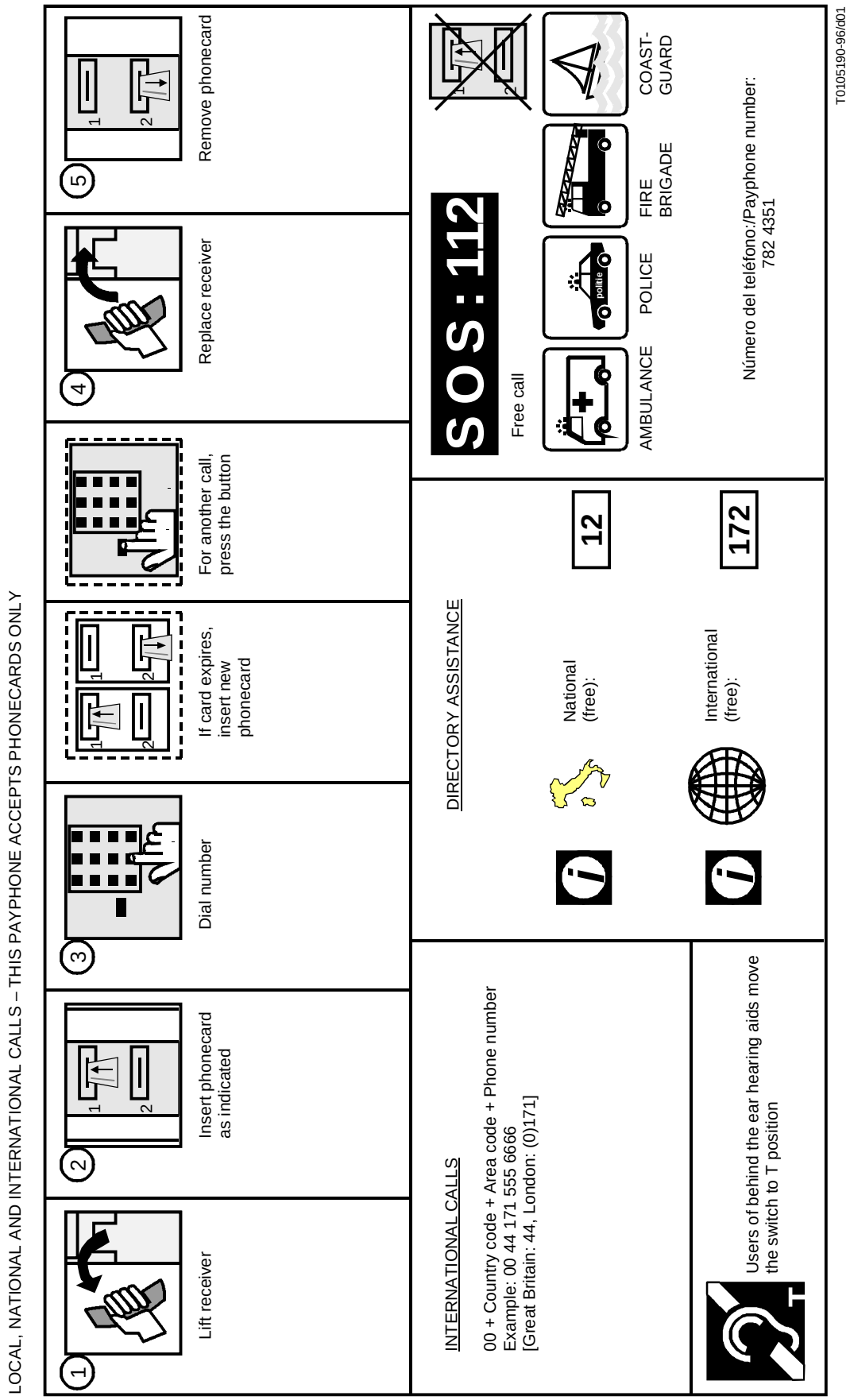
7.5.1 To accommodate the needs of foreign users, instructions in the appropriate language(s) should be provided on the display. The language(s) provided on the fixed instructions should be supported by the dynamic display if possible.

7.6 Charging

7.6.1 Information about the cost of a call may be provided on the display, e.g. by showing the credit remaining on a prepaid card or the elapsed time of the call.

Annex A

Cardphone



Appendix I

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[1] NORMAN (D.A.): The psychology of everyday things, *Basic Books*, Inc. Publishers, New York 1988.

[2] RACE ISSUE project (R1065): Human Factors Guidelines for Multimedia, p. 39.

[3] SPENCER (H.): The visible world, *Visual Communication Books (ISBN 8038-7733-1)*, New York 1969.

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