



INTERNATIONAL TELECOMMUNICATION UNION

# ITU-T

TELECOMMUNICATION  
STANDARDIZATION SECTOR  
OF ITU

## F.901

(03/93)

### OPERATIONS AND QUALITY OF SERVICE

### HUMAN FACTORS – GENERAL (NOT SPECIFIC TO TELEPHONE SERVICE)

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## USABILITY EVALUATION OF TELECOMMUNICATION SERVICES

### ITU-T Recommendation F.901

(Previously “CCITT Recommendation”)

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## FOREWORD

The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the International Telecommunication Union. 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, established the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

ITU-T Recommendation F.901 was prepared by the ITU-T Study Group I (1988-1993) and was approved by the WTSC (Helsinki, March 1-12, 1993).

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## NOTES

1 As a consequence of a reform process within the International Telecommunication Union (ITU), the CCITT ceased to exist as of 28 February 1993. In its place, the ITU Telecommunication Standardization Sector (ITU-T) was created as of 1 March 1993. Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.

In order not to delay publication of this Recommendation, no change has been made in the text to references containing the acronyms "CCITT, CCIR or IFRB" or their associated entities such as Plenary Assembly, Secretariat, etc. Future editions of this Recommendation will contain the proper terminology related to the new ITU structure.

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

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**Recommendation F.901****USABILITY EVALUATION OF TELECOMMUNICATION SERVICES***(Helsinki, 1993)***1 Introduction**

This Recommendation defines guidelines for measuring the usability of human-to-system interfaces in telecommunications.

Usability is widely recognized as one of the components of the Quality of Service. It plays a pivotal role in determining the success of new telecommunication services.

**2 Definitions**

The concept of usability and its components has been defined within ISO and ETSI. A specific interpretation of this definition for the human-to-system interface is as follows:

**usability:** A concept comprising the effectiveness, efficiency and satisfaction with which specified users can achieve specified system tasks in a particular environment;

**effectiveness:** Measures of the accuracy and completeness of the system tasks achieved;

**efficiency:** Measures of the accuracy and completeness of system tasks relative to the resources (e.g. time, human effort) used to achieve the specific system tasks;

**satisfaction:** Measures of the comfort and acceptability of the system to its users and other people affected by its use.

**3 Evaluation aspects**

The current literature and laboratory reports show that there is a world-wide commonality on the experimental procedures for usability evaluation. Both the techniques of the Protocol Analysis<sup>1)</sup> and controlled experiments have been used to evaluate the human-to-system interface. These techniques include many of the following considerations:

- 1) decide which usability dimensions are to be measured;
- 2) explore methods by which these can be assessed within the system-specific framework;
- 3) set explicit, quantifiable usability criteria (i.e. reference values);
- 4) design experimental tasks by which to assess the degree to which usability criteria have been met by the system;
- 5) let a sample of experimental subjects complete the set tasks. The subjects can be tested one at a time or together, dependent on experimental design. Subjects should be given instructional material as demanded by the tasks;
- 6) analyse the data statistically;
- 7) modify those areas of the system in which the usability criteria were not met, relying on anecdotal observations of where and when subjects encountered cognitive stumbling blocks;

<sup>1)</sup> Protocol Analysis: Standard evaluation method in cognitive psychology.